Integrated Advanced Microwave Sounding Unit-A (AMSU-A)
Performance Verification Report
EOS AMSU-A1 and AMSU-A2 Receiver Assemblies

Contract No. NAS 5-32314 CDRL 208

Submitted to:

National Aeronautics and Space Administration Goddard Space Flight Center Greenbelt, Maryland 20771

Submitted by:

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AMSU-A RECEIVER VERIFICATION TEST REPORT

LEVEL OF ASSEMBLY:

SUBASSEMBLY

TEST ITEM:

AMSU-A1 RECEIVER ASSEMBLY

P/N: 1356429-1, S/N: F01 P/N: 1356409-1, S/N: F01

AMSU-A2 RECEIVER ASSEMBLY

P/N: 1356441-1, S/N: F01

TYPE OF HARDWARE:

EOS FLIGHT MODEL (FM)

TYPE OF TEST:

FUNCTIONAL PERFORMANCE

VERIFICATION TEST PROCEDURE: AE-26002/6A

TEST FACILITY LOCATION:

AESP

AZUSA, CALIFORNIA

SIGNATURE:

TEST ENGINEER: () E | DATE: 5/09/198

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1.0 INTRODUCTION

The AMSU-A receiver subsystem comprises two separated receiver assemblies; AMSU-A1 and AMSU-A2 (P/N 1356441-1). The AMSU-A1-1 receiver contains 13 channels and the AMSU-A receiver 2 channels. The AMSU-A1 receiver assembly is further divided into two parts; AMSU-A1-1 (P/N 1356429-1) and AMSU-A1-2 (P/N 1356409-1), which contain 9 and 4 channels, respectively. The receiver assemblies are highlighted in Figures 1 and 2, which illustrate the functional block diagrams of the AMSU-A1 and AMSU-A2 systems.

The AMSU-A receiver subsystem stands in between the antenna and signal processing subsystems of the AMSU-A instrument and comprises the RF and IF components from isolators to attenuators as shown in Figures 1 and 2. It receives the RF signals from the antenna subsystem, down-converts the RF signals to IF signals, amplifies and defines the IF signals to proper power level and frequency bandwidth as specified for each channel, and inputs the IF signals to the signal processing subsystem.

This test report presents the test data of the EOS AMSU-A Flight Model No. 1 (FM-1) receiver subsystem. The tests are performed per the Acceptance Test Procedure for the AMSU-A Receiver Subsystem, AE-26002/6A. The functional performance tests are conducted either at the component or subsystem level. While the component-level tests are performed over the entire operating temperature range predicted by thermal analysis, the subsystem-level tests are conducted at ambient temperature only.

2.0 REASON FOR TEST

The Acceptance Test Procedure for the AMSU-A Receiver Subsystem, AE-26002/6A, is prepared to describe in detail the configuration of the test setups and how the tests are to be conducted to verify that the receiver subsystem meets the specifications as required either in the AMSU-A Instrument Performance and Operation Specification, S-480-80, or in AMSU-A Receiver Subsystem Specification, AE-26608, derived by the Aerojet System Engineering. Test results that verify the conformance to the specifications demonstrates the acceptability of that particular receiver subsystem.

3.0 ACCEPTANCE TEST

The acceptance tests for the AMSU-A receiver subsystem are performed either at the component or subsystem level. The component-level tests are conducted per the Acceptance Test Procedure of each component at supplier's facilities. The subsystem-level tests are conducted per the Acceptance Test Procedure, AE-26002/6A at Aerojet Azusa facility.

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The component-level tests include the center frequency, center frequency stability, bandpass characteristics, gain stability, and gain compression. Although the bandpass characteristics can change slightly in subsystem level, these performance are solely dependent on the component characteristics. The subsystem-level tests include the center frequency, IF output power, bandpass characteristics, noise figure, noise power stability, and the tunable short test.

The subsystem-level tests are performed on three receivers; AMSU-A1-1, AMSU-A1-2, and AMSU-A2. However, since the multiplexers of the AMSU-A1 system are inseparably integrated to the receivers, the acceptance tests are conducted with the feedhorns directly connected to respective multiplexers. Likewise, the AMSU-A2 receiver is tested with the feedhorn directly connected to the diplexer that precedes the receiver subsystem. These tests are performed at room ambient temperature only.

Wire connections between the D-sub connectors and platinum resistance temperature (PRT) sensors and thermistors, D-sub connector and PLO lock detection terminals, and D-sub connector and survival heaters through the thermal switches are verified by measuring either the resistance between the respective two pins or the voltage across the respective two pins. A failure was encountered during the wire connection tests for the A1-1 receiver. This failure was traced to wrong connection of wires between the D-sub connectors and a thermister (TB53) and corrected by reversing the wire connections. This issue is addressed in TAR No. 003182.

The functional performance tests for the EOS AMSU-A receiver subsystem began with the AMSU-A2 receiver. A higher noise figure (5.29dB) was measured for the channel 1 against the specification of 4.55dB. The cause of this out-of-specification condition was traced to the mixer/IF amplifier (P/N: 1331662-11, S/N: 7A01), and the unit was replaced by another (S/N: 7A11) resulting in a noise figure of 3.81 dB. This anomaly is addressed in F/AR No. 058.

The AMSU-A1-1 receiver tests were performed with the No. 2 phased-locked oscillator (PLO) only as the waveguide attenuator for the No. 1 PLO was not ready at the time of test. Another anomaly was encountered during these tests. The output level for the channels 6 and 7 was higher by 7-8 dB at the lower end of the passband and flattened out at 50-60 MHz. This anomaly resulted in higher noise figures than the predicted; 5.96dB for the channel 6 (pushing it to an out-of specification condition) and 5.09dB for the channel 7 against the specification of 5.2dB each when measured by a power meter. The cause of this anomaly was traced to the dielectric resonator oscillators (DROs) (P/N 1336610-6, S/N 85015 for channel 6 and P/N 1336610-7, S/N 85022 for channel 7). This issue is addressed in F/AR No. 070. The channel 6 DRO was replaced by another unit (S/N 85024) resulting in a noise figure of 4.06dB. The channel 7 DRO was not replaced as no other unit was available at the time of test while the measured noise figure was still within the specification of 5.2dB. During the preliminary system-level tests the power level of the channel 7 DRO was lowered reducing the hump over the lower portion

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of the passband. A plotted bandpass characteristic at the reduced LO power level is included in the test report.

The functional performance tests for the A1-1 receiver were continued with the replacement channel 6 DRO and the No. 1 PLO. However, the test procedure was modified for this A1-1 receiver; i) The noise figures were measured with 3 samples instead of 10 samples. ii) The bandpass characteristics for the channels 9 through 14 were not measured with the PLO No.1. iii) Noise stability tests were not conducted for channels 9 through 14 with the PLO No. 1. iv) Tunable short tests were not performed for all channels. (The tunable short test will instead be conducted on the METSAT AMSU-A receiver subsystem.)

The AMSU-A A1-2 receiver was likewise tested according to the modified procedure. The noise figures were measured with 3 samples. Noise stability and tunable short tests were omitted. No anomaly was observed for A1-2 receiver tests.

4.0 ORGANIZATION OF TEST DATA

The test data are organized in the following formats. The test data obtained at the component level are first summarized for each category for all applicable receiver channels. The bandpass characteristics of the filters are summarized only for the data measured at mid-temperature. Supporting component test data over the operating temperature range then follows the summaries.

The subsystem-level test data are organized for each receiver (A1-1, A1-2, and A2), but not in the order of tests. Test data recorded in the test sheet as prepared in the Acceptance Test Procedure and other test plots are included in this test report.

5.0 SUMMARY AND RECOMMENDATIONS

The EOS AMSU-A FM-1 receiver subsystem successfully passed all performance requirements and is delivered to the System Engineering for system integration and test. The test data, in most cases, indicated adequate margin for key performance specifications.

Some tests for the A1 receivers were either simplified or omitted. The noise stability test was conducted only for the channels 9 through 14 of the AMSU-A1-1 receiver with the PLO No.1. The noise stability test was conducted for all mixer/amplifiers at the component level. Tunable short test was not performed and will instead be conducted on the METSAT receivers.

We have encountered two out-of-specification conditions during the functional performance tests for the EOS AMSU-A receiver subsystem. Higher than predicted

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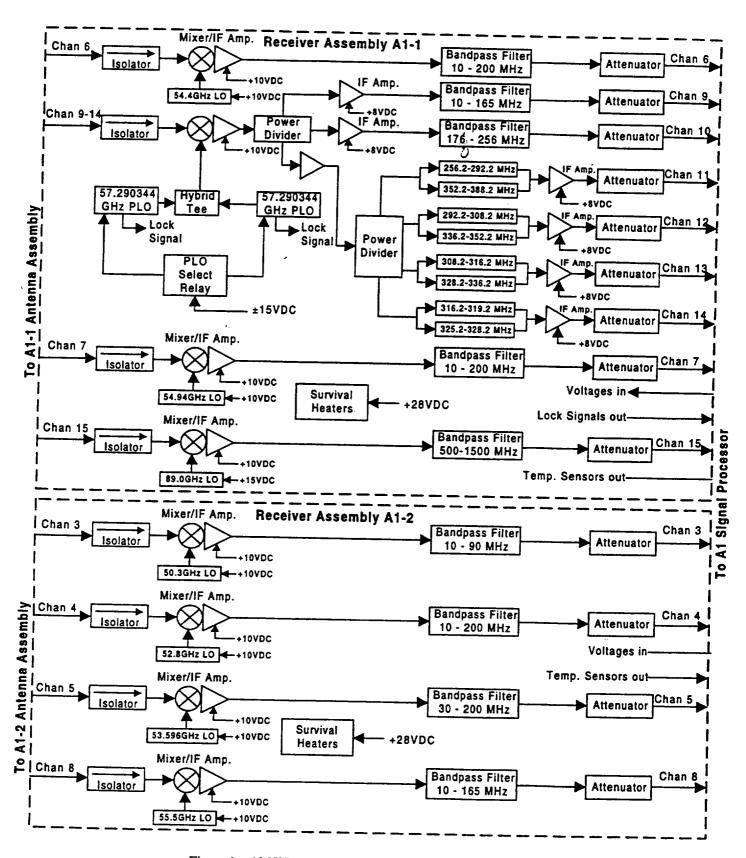


Figure 1. AMSU-Al Receiver Functional Block Diagram

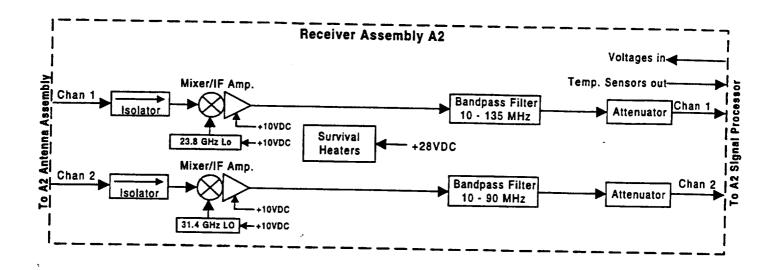


Figure 2. AMSU-A2 Receiver Functional Block Diagram

noise figures were measured for channel 1 of the A2 receiver and channel 6 of the A1-1 receiver (F/AR Nos. 058 and 070). We suspect the channel 1 noise figure anomaly to be the impedance matching at the RF port of the mixer. The channel 6 noise figure anomaly seems to be strongly related with the significant output level change over the passband. Similar phenomenon was observed on the channel 7 which indicated higher noise figure than the predicted and yet met the specification. We conveyed this concern to the System Engineering and requested to pay special attention to it during the system tests.

Lack of hardware has thus far limited us from conducting sufficient trouble-shooting and subsequent root-cause analyses on above-mentioned anomalies. The cause of those anomalies are not clear yet and their dispositions have not been completed at this time. We recommend that these issues are systematically investigated and a firm procedure is established to prevent similar anomalies from occurring on future receiver subsystems.

6.0 TEST DATA

In the following, the component and subsystem-level test data are organized as delineated in Paragraph 4.0.

COMPONENT-LEVEL TEST DATA

		•
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CENTER FREQUENCY AND FREQUENCY STABILITY

FOR

LOCAL OSCILLATORS (LOs) (DROs, PLOs, & GDO)

CENTER FREQUENCY OF LOS

15	89.0	0.03	88.987
9-14 *	57.290344	0.000086	57.290340 57.290329
∞	55.5	0.003	55.50077
7	54.94	0.001	54.93996
9	54.4	0.001	54.40008
5	53.596	0.001	53.59677
4	52.8	0.001	52.80022
3	\$0.3	0.002	50.30038
2	31.4	0.002	31.40028
	23.8	0.002	23.80004
Channel No.	Specification (GHz)	Setting Accuracy (+/-GHz)	Measured (GHz)

* Measured for PLO No. 1 and No. 2.

FREQUENCY STABILITY OF LOS

15	80	30	50	+5.,	50	76
9-14 *	0.086			0.039	0.114	0.115
8	9	2	9	+1.38,	2	0.1
7	3	_	2	+1.66,	2	0.1
9	3	_	7	+0.62,	2	0.1
5	3		7	+1.56,	2	0.1
4	3	-	2	+2.79	2	0.1
3	80	7	9	+3.17,	2	0.1
2	80	2	9	+1.73,	2	0.1
_	8	2	9	+3.45,	2	0.1
Channel No.	Short-Term Specification (+/-MHz)	Setting Accuracy (+/-MHz)	W/ Temp. & Voltage (+/-MHz)	Measured (MHz) Total	Long-Term Specification (+/-MHz)	By Design or Analysis ** (+/-MHz)

Note: Additional +/-0.1MHz frequency stability reserved for safety margin for channels 11-14.

^{*} Measured for PLO No. 1 and No. 2.** Based on accelerated life-test data for DROs.

Channel 1 LO

DRO (P/N: 1336610-1, S/N: 544321)

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

INI	HAL DATA	SEI FINAL DA	AIA SEI _V		
LITTON TYPE LS K 960	4 CF		AESD	1336610	
SERIAL NUMBER: 544		QUAL TEST		PT TEST V	
SEIGHE NEWIDER			_		
Basic Electrical Test; Ref. Test P	ara. 5.2.2				
SPECIFICATION		MEASUREMENT AT T	nom ±1°C	LIMIT	
Measurement at Vop=10 VDC					
Temperature		18°C		Table IIIB	
Input Voltage		VDC		$10.0 \pm 0.2 \text{ VDC}$	
Input Current		79 mA		Table IIIB	
Input Power, P _{diss}		0.79 W DC		P _{diss} max	
Frequency, f _{Tnom}		23.800 035GHz		Table IIIB	
RF Output Power, P _{Tnom}		13.8 dBm		12 to 17 dBm	
Frequency Setting Accuracy,		+.035 MHz		•	
$\Delta f_S = f_{Inom} - F_o$					
•					
Frequency and RF Output Power		h Voltage, Ref. Test Para :	5.2.3	·	
Measurement at 9.5 VDC or at _	VDC				
Temperature		<u>8</u> °C		Table IIIB	
Input Voltage		VDC		9.5 VDC or Para. 5.2.3.2	
Input Current		<u>78</u> mA		Table IIIB	
Frequency, f _{meas}		<u>23.800047</u> GHz		Table IIIB	
RF Output Power, P _{meas}		<u>(3.8</u> dBm		12 to 17 dBm	
Measurement at 10.5 VDC or at	VDO	-		,	
		<u>18</u> ℃		Table IIIB	
Temperature		ID VDC		10.5 VDC or Para. 5.2.3.3	
Input Voltage		78 mA		Table IIIB	
Input Current		23.800043GHz		Table IIIB	
Frequency, f _{meas}		13.8 dBm		12 to 17 dBm	
RF Output Power, P _{mess}		(<u>J.8</u> UD III).	
Calculate Frequency Variation,	$\Delta f_{V} = f_{\text{meas}} - f_{\text{Tree}}$	om			
Δf _V at 9.5 VDC or at	VDC =	+.012	MHz		
Δf _V at 10.5 VDC or at	VDC =	<u>+,008</u>	MHz		
Calculate RF Output Power Var	iation, $\Delta P_V = P_i$	meas - P _{Tnom} ,		*	
ΔP _V at 9.5 VDC or at	VDC =		_dB		
ΔP _V at 10.5 VDC or at	_ VDC =		_dB		
•	Acc	eept Reject			
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TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS

	A SET FINAL DA		<u> </u>
LITTON TYPE LS K 9604 CF			1336610
SERIAL NUMBER: 544321	QUAL TEST	_ ACCE	EPT TEST
Temperature Testing at T=10°C, Re	f. Test Para. 5.2.5.1		
SPECIFICATION	MEASUREMENT AT T=10° ±	<u>±1°C</u>	LIMIT
Measurement at Vop=10 VDC			
Temperature	<u>9.1</u> .°C		$10^{\circ} \pm 1^{\circ}C$
Input Voltage	VDC		$10.0 \pm 0.2 \text{ VDC}$
Input Current	79mA		Table IIIB
Input Power, P _{diss}	W DC		Pdiss max
Frequency, f _{10°C}	23.801282 GHz		Table IIIB
RF Output Power, P _{10°C}	<u>13.7</u> dBm		12 to 17 dBm
Frequency and RF Output Power Var Measurement at 9.5 VDC or at	VDC	Para 5.2.5.1	; ;
Temperature			Table IIIB
Input Voltage	9,5 VDC		9.5 VDC or Para. 5.2.3.2
Input Current	mA		Table IIIB
Frequency, f _{meas}	23.801287 GHz		Table IIIB
RF Output Power, P _{meas}	13.7dBm		12 to 17 dBm
Measurement at 10.5 VDC or at	VDC		
Temperature	<u> </u>		Table IIIB
Input Voltage	10.5 VDC		10.5 VDC or Para. 5.2.3.3
Input Current	79mA		Table IIIB
Frequency, f _{meas}	23.801280GHz		Table IIIB
RF Output Power, P _{meas}	<u>13.7</u> _dBm		12 to 17 dBm
Calculate Frequency Variation, Δf _V =	= f _{mess} - f _{10°C} :		•
Δf_V at 9.5 VDC or at	VDC = 4.005 N	ИHz	
$\Delta f_{\rm V}$ at 10.5 VDC or at	VDC =002 N	ИНz	
Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Tnom})	= <u>+1.247</u> N		
Calculate RF Output Power Variation	$n_1 \Lambda P_{12} = P_{1111} - P_{1212}$		•
ΔP _V at 9.5 VDC or at		iB	
ΔP _V at 10.5 VDC or at	** <u>-</u>	iB	
ΔP_T at 10.0 VDC (= $P_{10^{\circ}C}$ - P_{Tnom})		iB	
1 10 C HOLD			_
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TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS DITIAL DATA SET FINAL DATA SET V

INITIA	L DATA SE	T F	INAL DA	ATA SET	<u> </u>	
LITTON TYPE LS K 96 SERIAL NUMBER: 544		QUAL TEST _			1336610- <u> </u> PT TEST <u> </u>	
Temperature Extreme Testing	g at Tmin, R	ef. Test Para. 5.2.	5.2			
SPECIFICATION		MEASUREMI	ENT AT	Tmin ±1°C	LIMIT	
Measurement at Vop=10 VDo Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}	c	-4,7 10 79 0,79 23.803173	°C VDC mA W DC GHz dBm		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm	
Frequency and RF Output Po Measurement at 9.5 VDC or Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	ower Variation	on With Voltage, 1 VDC -4.7 9.5 79 23.803180	°C VDC mA GHz	Para 5.2.5.2	Table IIIB 9.5 VDC or Para 5 Table IIIB Table IIIB 12 to 17 dBm	.2.3.2
Measurement at 10.5 VDC of Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	r at	_VDC 	°C VDC mA GHz dBm		Table IIIB 10.5 VDC or Para Table IIIB Table IIIB 12 to 17 dBm	5.2.3.3
Calculate Frequency Variation Δf_V at 9.5 VDC or at Δf_V at 10.5 VDC or at Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tac}	VD	$c = \frac{f_{Tmin}}{C}$	+.0	07 MHz 006 MHz 138 MHz		:
Calculate RF Output Power ΔP_V at 9.5 VDC or at ΔP_V at 10.5 VDC or at ΔP_T at 10.0 VDC (= P_{Tmin} - P_T	VD	$P_V = P_{meas} - P_{Tmin}$: $P_C = P_{meas} - P_{Tmin}$:		10		
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TEST DATA SHEET 7.5

INII		SET FINAL I		<u> </u>
LITTON TYPE LS K 90	604 CF			D 1336610- <u>1</u>
SERIAL NUMBER: 54	4321	QUAL TEST	ACC	EPT TEST
Temperature Testing at T=3	0°C, Ref. Te	est Para. 5.2.5.3		
SPECIFICATION		MEASUREMENT AT	T=30° ±1°C	LIMIT
Measurement at Vop=10 VI	OC			
Temperature		<u>3\</u> ℃		$30^{\circ} \pm 1^{\circ}C$
Input Voltage		VDC		$10.0 \pm 0.2 \text{ VDC}$
Input Current		79 mA		Table IIIB
Input Power, P _{diss}		0.79 WDC		Pdiss max
Frequency, f _{30°C}		23.797137 GHz		Table IIIB
RF Output Power, P _{30°C}		13.7 dBm		12 to 17 dBm
Frequency and RF Output Po Measurement at 9.5 VDC or		_ VDC	Para 5.2.5.3	· · · · · ·
Temperature		<u>3\</u> °C		Table IIIB
Input Voltage		<u>9.5</u> VDC		9.5 VDC or Para. 5.2.3.2
Input Current				Table IIIB
Frequency, f _{meas}		23.797143GHz		Table IIIB
RF Output Power, P _{meas}		13.7dBm		12 to 17 dBm
Measurement at 10.5 VDC of	or at	VDC		
Temperature		3\°C		Table IIIB
Input Voltage		10.5 VDC		10.5 VDC or Para. 5.2.3.3
Input Current		79 mA		Table IIIB
Frequency, f _{meas}		23.797131 GHz		Table IIIB
RF Output Power, P _{meas}		(3.7 dBm		12 to 17 dBm
Calculate Frequency Variation Δf_V at 9.5 VDC or at Δf_V at 10.5 VDC or at Δf_T at 10.0 VDC (= $f_{30^{\circ}C}$ - f_{Tax}) Calculate RF Output Power ΔP_V at 9.5 VDC or at ΔP_V at 10.5 VDC or at	VI	$C = \frac{7.006}{2.898}$	MHz	
ΔP_{T} at 10.0 VDC (= $P_{30^{\circ}C}$ - P_{1}		=1	dB	
Test Performed by		Accept	<u> </u>	et
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TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS

:	T FINAL DAT		
LITTON TYPE LS K 9604 CF		AESD 1336610- \	
SERIAL NUMBER: 544321	QUAL TEST		
Temperature Extreme Testing at Tmax, Ref.	. Test Para. 5.2.5.4		
SPECIFICATION	MEASUREMENT AT To	nax ±1°C LIMIT	
Measurement at Vop=10 VDC	_		
Temperature	<u>39.9</u> °C	Table IIIB	
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$	
Input Current	<u>78</u> mA	Table IIIB	
Input Power, P _{diss}	<u>6.78</u> WDC	Pdiss max	
Frequency, f _{Tmax}	23.796162 GHz	Table IIIB	
RF Output Power, P _{Tmax}	<u>13.7</u> dBm	12 to 17 dBm	
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at V	With Voltage, Ref. Test Par	ra 5.2.5.4	
Temperature	<u>39.9</u> ℃	Table IIIB	
Input Voltage	9.5 VDC	9.5 VDC or Para 5.2.3	.2
Input Current		Table IIIB	
Frequency, f _{meas}	23.796165GHz	Table IIIB	
RF Output Power, P _{meas}	1 3 7 dBm	12 to 17 dBm	
Measurement at 10.5 VDC or at	VDC	,	
Temperature	<u>39.9 °C</u>	Table IIIB	
Input Voltage		10.5 VDC or Para 5.2.	3.3
Input Current	<u>78</u> mA	Table IIIB	
Frequency, f _{meas}	23.796159GHz	Table IIIB	
RF Output Power, P _{meas}	/3.7dBm	12 to 17 dBm	
Calculate Frequency Variation, $\Delta f_V = f_{meas}$	· f _{Tmax} :	•	
Δf_V at 9.5 VDC or at VDC			
Δf_{V} at 10.5 VDC or at VDC			
Δf_T at 10.0V (= f_{Tmax} - f_{Tnom})	= <u>-3.873</u> M	Hz	
Calculate RF Output Power Variation, ΔP_V	$= P_{\text{meas}} - P_{\text{Tnom}}$:		
ΔP _V at 9.5 VDC or at VDC			
ΔP_V at 10.5 VDC or at VDC			
ΔP_{T} at 10.0 VDC (= P_{Tmax} - P_{Tnom})	= dB		
Acce	ept Reject		
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LITTON Solid State

TEST DATA SHEET 7.23B

	FUNCT	TIONAL PERFOR	MANCE TE	STS	
INIT	IAL DATA SI	ET FN	NAL DATA S	SET	<u> </u>
LITTON TYPE LS K 96	004 CF	_			AESD 1336610- 1
SERIAL NUMBER: 54	4321	QUAL TEST _	·	_	ACCEPT TEST V
Frequency Pulling and Load	I VSWR 2.5:1	max. all phases. I	Ref Test Para.	5.9	
TEST DESCRIPTION				LIMI	<u>rs</u>
Output Open and Short. Ref	Test Para. 5.9	9.5			
Temperature	_ 23	°C		24°C :	± 5°C
Frequency:	23.79930	- oı GHz		Table	
RF Output Power:	13.8	dBm			17 dBm
Input Voltage	10	VDC			.2 VDC
Input Current:	78	mA		Table	
Results:	- '5	_ Acceptable			
results.		_ Acceptable		INO DE	mage or Degradation
Calculate maximum Frequency Accuracy (both positive and negative), $\Delta f_{acc} = \Delta f_S$ (Use worst-case Δf_S from 7.2, 7.7, and 7.22A) + Δf_H (from 7.22A) + Δf_L (from 7.23A):					
Maximum $\Delta f_{acc} =$	4.296	MHz (Positive))	Table	IIIB
a.c.		MHz (Negative		Table	
Calculate maximum Short-te $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use wors Maximum $\Delta f_{V+T} =$	st-case Δf_V and	• •	17.6):	gative), Table ! Table !	ШВ
Calculate maximum overall RF Output Power Stability (both positive and negative), $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T} \text{ (Use worst-case } \Delta P_{V} \text{ and } \Delta P_{T} \text{ from 7.2 thru 7.6)} + \Delta P_{H} \text{ (from 7.22A)} + \Delta P_{L} \text{ (from 7.23A)}$					
Maximum $\Delta P_{OV} =$	2	dB (Positive) dB (Negative)		1.0 dB -1.0 dE	
	Acc	ept Reje	ect		
Test Performed by	<u></u> M	I	Date	- 29 -	97
Litton Q.A.	Ustyna W s	<u> </u>	Date OCT	3 1 1997	<u> </u>
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CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68
56348	Α	1300823	B3	
LITTO: SOLIT	CTATED	VICTON / 2261 OF COTT	OT / CANTA	CT ADA CA OSOCA

Channel 2 LO

DRO (P/N: 1336610-2, S/N: 85010)

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET _____ FINAL DATA SET _____

LITTON TYPE LS A 9635 CF SERIAL NUMBER: 85010	QUAL TEST	AESD 1336610- ≥ ACCEPT TEST
Basic Electrical Test: Ref. Test Para. 5.2.2		
SPECIFICATION	MEASUREMENT AT Tnom ±	LIMIT
Measurement at Vop=10 VDC		
Temperature	°C	Table IIIB
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	116.4 mA	Table IIIB
Input Power, Pdiss	11164 W DC	P _{diss} max
Frequency, f _{Tnom}	31. 4002 MGHz	Table IIIB
RF Output Power, P _{fnom}	13.75 dBm	12 to 17 dBm
Frequency Setting Accuracy. $\Delta f_S (= f_{Tnom} - F_o)$	+.284_MHz	•
Frequency and RF Output Power Variation With	n Voltage, Ref. Test Para 5.2.3	
Measurement at 9.5 VDC or at VDC	18.1 °C	Table IIIB
Temperature Input Voltage	9.5 VDC	9.5 VDC or Para. 5.2.3.2
Input Current	116.4 mA	Table IIIB
Frequency, f _{meas}	31.400 265 GHz	Table IIIB
RF Output Power, P _{meas}		12 to 17 dBm
Measurement at 10.5 VDC or at VDC		
Temperature	18.1 °C	Table IIIB
Input Voltage		10.5 VDC or Para. 5.2.3.3
Input Current	164 mA	Table IIIB
Frequency, f _{meas}	31.400 >68GHz	Table IIIB
RF Output Power. P _{meas}	13.7.5_ dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tno}$	m	
Δf_V at 9.5 VDC or at VDC =	_	
Δf_V at 10.5 VDC or at VDC =	MHz	
Calculate RF Output Power Variation, $\Delta P_V = P_n$	neas - P _{Tnom} ,	
ΔP_V at 9.5 VDC or at VDC =	1,	
ΔP_V at 10.5 VDC or at VDC =	Ø dB	
Acce	ept Reject	
Test Performed by	Date 11-18-47	
Litton QA	NUV 2 5 1997	_
CODE IDENT NO. SIZE	NUMBER RE	V SHEET 38 OF 68

TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS

FU INITIAL DAT.	NCTIONAL PERFORMANCE TE: A SET FINAL DATA	STS SET ✓				
_						
LITTON TYPE LS A 9635 CF		AESD 1336610- Z				
SERIAL NUMBER: 85010	QUAL TEST	ACCEPT TEST				
Temperature Testing at T=10°C. Ref. Test Para. 5.2.5.1						
SPECIFICATION	MEASUREMENT AT T=10° ±1°C	LIMIT				
Measurement at Vop=10 VDC						
Temperature	<u>0°</u> C	10° ± 1°C				
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$				
Input Current	16.3mA	Table IIIB				
Input Power. P _{diss}		Pdiss max				
Frequency, f _{10°C}	31,400 910 GHz	Table IIIB				
RF Output Power. P _{10°C}	13.8dBm	12 to 17 dBm				
Frequency and RF Output Power Var	iation With Voltage, Ref. Test Para	5.2.5.1				
Measurement at 9.5 VDC or at	VDC					
Temperature	10.6 °C	Table IIIB				
Input Voltage	<u> </u>	9.5 VDC or Para. 5.2.3.2				
Input Current		Table IIIB				
Frequency, f _{meas}	31.400 900 GHz	Table IIIB				
RF Output Power. P _{meas}	/3.8 dBm	12 to 17 dBm				
Measurement at 10.5 VDC or at	VDC					
Temperature		Table IIIB				
Input Voltage		10.5 VDC or Para. 5.2.3.3				
Input Current	//6.3 mA	Table IIIB				
Frequency, f _{meas}	31.400920GHz	Table IIIB				
RF Output Power, P _{meas}	/3.8 dBm	12 to 17 dBm				
Calculate Frequency Variation. $\Delta f_v =$	fmese - finec:					
Afy at 9.5 VDC or at	VDC = MHz					
Δf _V at 10.5 VDC or at	VDC = +.01 MHz					
Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Tnom})	= <u>+.626</u> MHz					
Calculate RF Output Power Variation	$AP_{ij} = P_{-ij} - P_{100C}$					
$\Delta P_{\rm v}$ at 9.5 VDC or at	VDC = Ø dB					
ΔP_V at 10.5 VDC or at	VDC =					
ΔP_T at 10.0 VDC (= P_{10} °C - P_{Tnom})	= +, os dB					
APT at 10.0 VDC (-1 10°C -1 Tnom)						
	Accept					
Test Performed by	Date _//-18-9					
Litton Q.A.	Date <u>NOV 2 5 19</u>	<u> </u>				
(E)		Latter 20 OF (C				
CODE IDENT NO.		EV SHEET 39 OF 68				
56348 A	1 10000	B3				
LITTON / SOLID STATE	E DIVISION / 3251 OLCOTT ST / S	SANTA CLARA, CA 95054				

TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS

INI	TIAL DATA SE	T FIN	AL DATA SET		
LITTON TYPE LS _A_ SERIAL NUMBER:		QUAL TEST		D 1336610- 2 CEPT TEST	
Temperature Extreme Testing at Tmin. Ref. Test Para. 5.2.5.2					
SPECIFICATION		MEASUREMEN	T AT Tmin ±1°C	LIMIT	
Measurement at Vop=10 Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}	VDC	115.8 m 1.158 W 31.401440G	DC A ' DC	Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm	
Frequency and RF Output Measurement at 9.5 VDC Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		VDC -4.9 °C 9.5 VI -116.0 m. 31.401430 GI	C DC A	Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm	
Measurement at 10.5 VD0 Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	C or at	/16-0 m. 31.40/445G	DC A	Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm	
Calculate Frequency Vari Δf_V at 9.5 VDC or at Δf_V at 10.5 VDC or at Δf_T at 10.0 VDC (= f_{Tmin} -	VDC	=	-, 01 MHz		
Calculate RF Output Pow ΔP_V at 9.5 VDC or at ΔP_V at 10.5 VDC or at ΔP_T at 10.0 VDC (= P_{Tmin}	VDC VDC	=	# dB dB dB		
Test Performed by Litton Q.A. Accept Reject Date					
CODE IDENT NO. 56348	SIZE'/ A	NUMBER 1300823	REV B3	SHEET 40 OF 68	

TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

INITIAL DATA SE	T FINAL DATA SET _	<u></u>		
LITTON TYPE LS A 9635 CF SERIAL NUMBER: 85010		D 1336610- Z		
Temperature Testing at T=30°C, Ref. Test Para. 5.2.5.3				
SPECIFICATION	MEASUREMENT AT T=30° ±1°0	C LIMIT		
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{30°C} RF Output Power, P _{30°C} Frequency and RF Output Power Variation Measurement at 9.5 VDC or at V Temperature Input Voltage		Table IIIB 9.5 VDC or Para. 5.2.3.2		
Input Current Frequency: f _{meas} RF Output Power: P _{meas}		Table IIIB Table IIIB 12 to 17 dBm		
Measurement at 10.5 VDC or at Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	VDC <u>30.4</u> °C <u>10.5</u> VDC <u>117.0</u> mA <u>31.39f &40</u> GHz <u>13.7</u> dBm	Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm		
Calculate Frequency Variation, $\Delta f_V = f_{meas} - \Delta f_V$ at 9.5 VDC or at VDC Δf_V at 10.5 VDC or at VDC Δf_T at 10.0 VDC (= $f_{30^{\circ}\text{C}} - f_{Tnom}$) Calculate RF Output Power Variation. ΔP_V ΔP_V at 9.5 VDC or at VDC	$= \frac{+.0/}{+.0/} MHz$ $= \frac{+.0/}{-1.45} MHz$ $= P_{meas} - P_{30°C}$ $= \frac{\phi}{dB}$			
ΔP_V at 10.5 VDC or at VDC ΔP_T at 10.0 VDC (= $P_{30^{\circ}C}$ - P_{Tnom})	=	ect		
Test Performed by Litton Q.A.	Date <u>1/-18-47</u> Date NOV 2-5 1997	SHEET ALL OF 68		

TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS MITTAL DATA SET FINAL DATA SET

INI		SET FINAL D		<u> </u>
LITTON TYPE LS A 9 SERIAL NUMBER: 8		QUAL TEST		0 1336610- 2 EPT TEST
Temperature Extreme Testii	ng at Tmax.	Ref. Test Para. 5.2.5.4		
SPECIFICATION		MEASUREMENT AT	Tmax ±1°C	LIMIT
Measurement at Vop=10 VI Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmax}	OC .	°C VDC 		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB
RF Output Power. P _{Imax}				12 to 17 dBm
Frequency and RF Output P Measurement at 9.5 VDC or Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}			Para 5.2.5.4	Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC of Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	or at	VDC 4°C (o.ऽVDC (17.⇔mA _31_397476GHz /3.7dBm		Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variati Δf_V at 9.5 VDC or at Δf_V at 10.5 VDC or at Δf_T at 10.0V (= f_{Tmax} - f_{Tnom})	VD	OC =	MHz MHz MHz	
Calculate RF Output Power ΔP_V at 9.5 VDC or at ΔP_V at 10.5 VDC or at ΔP_T at 10.0 VDC (= P_{Tmax} - P_T	VD	OC =	dB dB dB	
Test Performed by Litton Q.A.	A TO S	Date //-/&	-97 5 1997	7
CODE IDENT NO. 56348	SIZE	NUMBER 1300823	REV B3	SHEET 42 OF 68

TITE IN / SOI ID STATE DIVISION / 3251 OLCOTT ST / SANTA CLARA, CA 95054

	TEST DATA SHEET 7.2	
D.II	FUNCTIONAL PERFORMANG ITIAL DATA SET FINAL D	LE LESIS
INI	ITIAL DATA SETTINAL L	ATA JET
TITTON TUDE IS A G	9/25 /E	AESD 1336610- ~
LITTON TYPE LS A '	9635 CF 85010 QUAL TEST	ACCEPT TEST
SERIAL NUMBER.	40.12	
Frequency Pulling and Lo	ad VSWR 2.5:1 max. all phases. Ref Te	st Para. 5.9
TEST DESCRIPTION		LIMITS
Output Open and Short. R	ef. Test Para. 5.9.5	
Timesentura	22 °C	24°C ± 5°C
Temperature	31. 400 210 GHz	Table IIIB
Frequency: RF Output Power:	/3.8 _ dBm	12 to 17 dBm
Input Voltage		$10 \pm 0.2 \text{ VDC}$
Input Current:	116.6 mA	Table IIIB
Results:	Acceptable	No Damage or Degradation
(Courts.		
$\Delta f_{acc} = \Delta f_S$ (Use worst-ca	uency Accuracy (both positive and negations Δf_S from 7.2, 7.7, and 7.22A) + Δf_H (f	From 7.22A) + Δf_L (from 7.23A):
	+.564 +.454 MHz (Positive) -312 MHz (Negative)	Table IIIB
Maximum $\Delta f_{acc} =$	MHZ (Positive)	Table IIIB
	- 3/2 MHZ (Negative)	Table IIID
Calculate maximum Shor $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use w	t-term Frequency Stability (both positive vorst-case Δf_V and Δf_T from 7.2 thru 7.6):	and negative),
A.C. —	11/66 MHz (Positive)	Table IIIB
Maximum $\Delta f_{V+T} =$	<u>+1.166</u> MHz (Positive) <u>-2.823</u> MHz (Negative)	Table IIIB
	(Negative)	120.0
Calculate maximum over $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T}$ (Use	all RF Output Power Stability (both posit worst-case ΔP_V and ΔP_T from 7.2 thru 7.0	ive and negative), $\delta + \Delta P_H \text{ (from 7.22A)} + \Delta P_L \text{ (from 7.23A)}$
\(\alpha_{	+ . 2.5 dR (Positive)	1.0 dB
Maximum $\Delta P_{OV} =$	dB (Positive) dB (Negative)	-1.0 dB
	db (Negative)	
	Accept Reject	
Test Performed by	Date	11-21-97
	(2)	
Litton Q.A.	Date	NOV 2 5 1997
		-

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 6	1 OF 68
56348	A	1300823	B3		
LITTON / SOLII	STATED	VISION / 3251 OLCOTT	ST / SANTA	CLARA, C.	A 95054

Channel 3 LO

DRO (P/N: 1336610-3, S/N: 85094)

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

INITIAL DATA	SEI FINAL DATA	SE1
CONTRACTOR TO A 27 AM		AESD 13366103
LITTON TYPE LS E 9036 AM	QUAL TEST	ACCEPT TEST
SERIAL NUMBER: 85094	QUAE TEST	
Basic Electrical Test: Ref. Test Para. 5.2.2		
SPECIFICATION	MEASUREMENT AT Inom:	<u>LIMIT</u>
Measurement at Vop=10 VDC		T. 1.1 W.D.
Temperature	°C	Table IIIB
Input Voltage	/0. o VDC	10.0 ± 0.2 VDC
Input Current		Table IIIB
Input Power, P _{diss}	1.94 W DC	P _{diss} max
Frequency, f _{Tnom}	50.300 38 GHz	Table IIIB
RF Output Power, P _{Inom}	dBm	12 to 17 dBm
Frequency Setting Accuracy.		
$\Delta f_{S} (= f_{Tnom} - F_{o})$		
Frequency and RF Output Power Variation W Measurement at 9.5 VDC or at VDC	ith Voltage, Ref. Test Para 5.2.3	
Temperature	°C	Table IIIB
Input Voltage	5.5 VDC	9.5 VDC or Para. 5.2.3.2
aput Current	792 mA	Table IIIB
Frequency, f _{meas}	57.300 Fo GHz	Table IIIB
RF Output Power, P _{meas}	/3.7 dBm	12 to 17 dBm
·		
Measurement at 10.5 VDC or at 10.5 VI	DC 3.5	T 11 IIID
Temperature		Table IIIB
Input Voltage	VDC	10.5 VDC or Para. 5.2.3.3
Input Current) 32 mA	Table IIIB
Frequency, f _{meas}	5030041 GHz	Table IIIB
RF Output Power, P _{meas}	<u>/3.7</u> dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_T$	rom,	
Δf _V at 9.5 VDC or at VDC	= <u>+.02</u> MH2	
Δf_V at 10.5 VDC or at VDC		:
Calculate RF Output Power Variation, $\Delta P_V =$	P _{meas} - P _{Tnom} ,	
VDC or at VDC or at VDC	c =dB	
ΔP _V at 9.5 VDC or at VDC ΔP _V at 10.5 VDC or at VDC		
ΔP_V at 10.5 VDC of at		
A	ccept Reject	
Test Performed by Litton QA	Date /2-15-97 Date	

ſ	CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 38 OF 68
1	56348	A	1300823	B3	
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56348

TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TES

FUNCTIONAL PERFORMANCE TESTS	
INITIAL DATA SET FINAL DATA SET	<u> </u>
LITTON TYPE LS E 9036 AM AESD 13360	
SERIAL NUMBER: 85094 QUAL TEST ACCEPT TE	EST
Temperature Testing at T=10°C, Ref. Test Para. 5.2.5.1	
SPECIFICATION MEASUREMENT AT T=10° ±1°C LIMI	I
Measurement at Vop=10 VDC	
Temperature $\frac{1}{.0}$ °C $10^{\circ} \pm$	1°C
Input Voltage VDC 10.0	<u>+</u> 0.2 VDC
Input Current mA Table	IIIB
Input Power, P _{diss}	max
Frequency, $f_{10^{\circ}C}$ So. 299 22 GHz Table	IIIB
RF Output Power, P _{10°C}	17 dBm
Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.1 Measurement at 9.5 VDC or at 7.5 VDC	
Temperature°C Table	IIIB
Input Voltage 9.5 VDC 9.5 V	DC or Para. 5.2.3.2
nput Current 190 mA Table	IIIB
Frequency, f _{meas} So. 299 Zo GHz Table	IIIB
RF Output Power, P _{meas} /3.7 dBm 12 to	17 dBm
Measurement at 10.5 VDC or at 10.5 VDC Temperature 11.0 °C Table	IIIB
	DC or Para. 5.2.3.3
Input Current mA Table	IIIB
Frequency, f_{meas} Table	IIIB
RF Output Power, P _{meas} 13.7 dBm 12 to	17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{10^{\circ}C}$:	
Δf_V at 9.5 VDC or at VDC = MHz	
Δf_v at 10.5 VDC or at VDC = 03 MHz	
Δf_T at 10.0 VDC (= $f_{10^{\circ}\text{C}} - f_{Tnom}$) = MHz	
Calculate RF Output Power Variation. $\Delta P_V = P_{meas} - P_{10^{\circ}C}$:	
ΔP_{V} at 9.5 VDC or at VDC = Φ dB	
ΔP_V at 10.5 VDC or at VDC = Φ dB	
$\Delta P_T \text{ at } 10.0 \text{ VDC } (=P_{10^{\circ}\text{C}} - P_{\text{Tnom}}) = \underline{\hspace{1cm}} dB$	
Accept Reject	
Test Performed by Date 12-15-97	
Litton Q.A.	
CODE IDENT NO. SIZE NUMBER REV SHEET	T 39 OF 68

B3

1300823

TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET ______ FINAL DATA SET _____

INITIAL DATA SET	Γ FINAL DATA	SET
LITTON TYPE LS E 9036 AM SERIAL NUMBER: 85094	QUAL TEST	AESD 1336610- 3 ACCEPT TEST V
Temperature Extreme Testing at Tmin, Re	f. Test Para. 5.2.5.2	
SPECIFICATION	MEASUREMENT AT Tmin	±1°C LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output. Power Variation Measurement at 9.5 VDC or at	n With Voltage, Ref. Test Para VDC	Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or at 10.5 Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	VDC 1 °C 10.5 VDC N 9 mA 50,29965 GHz 13.8 dBm	Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ Δf_V at 9.5 VDC or at VDC Δf_V at 10.5 VDC or at VDC Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom})	04	MHz MHz MHz
Calculate RF Output Power Variation, $\Delta P_V \Delta P_V$ at 9.5 VDC or at VDC ΔP_V at 10.5 VDC or at VDC ΔP_T at 10.0 VDC (= P_{Tmin} - P_{Tnom})	:= <u> </u>	dB dB dB
Test Performed by Litton Q.A.	Date 13-15-9 Date DEC 1 5 189	7-
CODE IDENT NO. SIZE	NUMBER R	EV SHEET 40 OF 68

B3

1300823

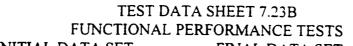
TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET_____ FINAL DATA SET_____

LITTON TYPE IS = 0		4 FOD 100//10 D
LITTON TYPE LS <u>E 9036 AM</u> SERIAL NUMBER: 85094		AESD 1336610- 3
SERIAL NUMBER. \$5099	QUAL TEST	ACCEPT TEST
Temperature Testing at T=30°C, Ref. Test I	Para. 5.2.5.3	
SPECIFICATION	MEASUREMENT AT T=30°	±1°C LIMIT
Measurement at Vop=10 VDC	_	
Temperature	°C	$30^{\circ} \pm 1^{\circ}C$
Input Voltage		$10.0 \pm 0.2 \text{ VDC}$
Input Current		Table IIIB
Input Power, P _{diss}		Pdiss max
	50,30149 GHz	Table IIIB
RF Output Power. P _{30°C}	/ 5 .7dBm	12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at	DC _	2.5.3
Temperature	<u> </u>	Table IIIB
Input Voltage	<u> </u>	9.5 VDC or Para. 5.2.3.2
Input Current	19 <u>3</u> mA	Table IIIB
Frequency, f _{meas}	5030152 GHz	Table IIIB
RF Output Power, P _{meas}	13-¬dBm	12 to 17 dBm
Measurement at 10.5 VDC or at	/DC	
Temperature	<u>29. ≈</u> °C	Table IIIB
Input Voltage	VDC	10.5 VDC or Para. 5.2.3.3
Input Current	193mA	Table IIIB
Frequency, f _{meas}	50:301 53 GHz	Table IIIB
RF Output Power, P _{meas}	13·7 dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ -	fanc.	
Δf_V at 9.5 VDC or at VDC =		
Δf_V at 10.5 VDC or at VDC =		
Δf_T at 10.0 VDC (= $f_{30^{\circ}C}$ - f_{Tnom})		
Calculate RF Output Power Variation, $\Delta P_V = \Delta P_V$ at 9.5 VDC or at VDC =	,	
•		
$\Delta P_T \text{ at } 10.0 \text{ VDC } (=P_{30^{\circ}\text{C}} - P_{\text{Tnom}})$	ø dB	
	Accept1	Reject
Test Performed by	Date $12-15.97$	•
Litton Q.A.	Date DEC 1 8 2017	
CODE IDENT NO. SIZE	NUMBER REV	SHEET 41 OF 68
56348 A	1300823 B3	
LITTON / SOLID STATE DIVIS	ION / 3251 OLCOTT ST / SAN	NTA CLARA, CA 95054

TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS

INITIAL DATA SE	T FINAL DATA S	SET
LITTON TYPE LS E 9036 AM		AESD 1336610- 3
SERIAL NUMBER: 85094	QUAL TEST	ACCEPT TEST \checkmark
Temperature Extreme Testing at Tmax, Ref.	. Test Para. 5.2.5.4	
SPECIFICATION	MEASUREMENT AT Tmax	±1℃ LIMIT
Measurement at Vop=10 VDC	. 1	
Temperature	<u>43.2</u> °C	Table IIIB
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	<u> 197</u> mA	Table IIIB
Input Power, P _{diss}	<u> (・9 フ</u> W DC	Pdiss max
Frequency, f _{Tmax}	50302≥3 GHz	Table IIIB
RF Output Power, P _{Fmax}	13,7 dBm	12 to 17 dBm
Frequency and RF Output Power Variation	With Voltage, Ref. Test Para 5	.2.5.4
Measurement at 9.5 VDC or at 9.5 V	• • · · · · · · · · · · · · · · · · · ·	
Temperature		Table IIIB
Input Voltage	<u> うら</u> VDC	9.5 VDC or Para 5.2.3.2
Input Current	195 mA	Table IIIB
Frequency, f _{meas}	50302 83 GHz	Table IIIB
RF Output Power, P _{meas}	dBm	12 to 17 dBm
Measurement at 10.5 VDC or at _/o.5	VDC	
Temperature	43.2 °C	Table IIIB
Input Voltage	10.5 VDC	10.5 VDC or Para 5.2.3.3
Input Current	195mA	Table IIIB
Frequency, f _{meas}	5080283 GHz	Table IIIB
RF Output Power, P _{meas}	13.7 dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$	f _{Tmax} :	
Δf_V at 9.5 VDC or at VDC :		
Δf_V at 10.5 VDC or at VDC =	= <u></u>	
Δf_{T} at 10.0V (= f_{Tmax} - f_{Tnom})	= <u>+2.45</u> MHz	
Calculate RF Output Power Variation, ΔP _V	= P _{meas} - P _{Tnom} :	
ΔP_{V} at 9.5 VDC or at VDC		
ΔP_{V} at 10.5 VDC or at VDC	= <u>\$\delta\$</u> dB	
ΔP_T at 10.0 VDC (= P_{Tmax} - P_{Tnom})	= <u>\$\phi\$</u> dB	
Acce	pt Reject	
Test Performed by	Date 12-15-9	2.
Litton O.A.	Date <u>DEC 1 6 1997</u>	
(South)		
CODE IDENT NO SIZE	NUMBER RE	SHEET 42 OF 68

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 42 OF 68
56348	A	1300823	B3	



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DII		IAL PERFORMAN		,	
INI	ΓIAL DATA SET _	FINAL I	JATA SET_		
TITTON TVDE IS + 0	2-21 0-4			A FOR 1997(11)	
LITTON TYPE LS &	· · · · · · · · · · · · · · · · · · ·	IIAI TECT		AESD 1336610- 골	
SERIAL NUMBER:	85044 V	UAL TEST		ACCEPT TEST	
Frequency Pulling and Loa	d VSWR 2.5:1 max	. all phases. Ref Te	st Para. 5.9		
TEST DESCRIPTION			LIM	ITS	
Output Open and Short. Re	f. Test Para. 5.9.5				
Temperature	2 2 ℃		24°C	C±5°C	
Frequency:	<u>50.3∞39</u> GI			e IIIB	
RF Output Power:	<u></u>			o 17 dBm	
Input Voltage	10 VI			0.2 VDC	
Input Current:				e IIIB	
Results:		ceptable			
results.	AC	ceptable	NOL	Damage or Degradation	
Calculate maximum Freque $\Delta f_{acc} = \Delta f_S$ (Use worst-case)				$+\Delta f_L$ (from 7.23A):	
Maximum $\Delta f_{acc} =$	+.68 N	IHz (Positive)	Table	e IIIB	
		IHz (Negativé)		e IIIB	
Calculate maximum Short-term Frequency Stability (both positive and negative), $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use worst-case Δf_V and Δf_T from 7.2 thru 7.6):					
$\Delta I_{V+T} - \Delta I_V + \Delta I_T$ (Ose wol	SI-Case MIV and MIT	nom 7.2 uru 7.6):			
Maximum $\Delta f_{V+T} =$	+2.49 M	Hz (Positive)	Table	IIID	
Maximum AIV+T —		(Hz (Negative)		e IIIB	
	X + Y D IVI	iriz (ivegative)	1 2016	e IIIB	
Calculate maximum overall $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T}$ (Use we	RF Output Power Sorst-case ΔP_V and ΔP_V	Stability (both positi P _T from 7.2 thru 7.6	ve and negation $+ \Delta P_H$ (from	ive), n 7.22A) + ΔP _L (from 7.23A):	
Maximum ΔP _{OV} =		R (Positiva)	1.0 d	O C	
Waxiiidii 24 ov -	dI				
		o (Negative)	-1.0 c	ID	
	Accept _	√ Reject			
Test Performed by	DH	Date	12_15-	97	
	(28 Z)				
Litton Q.A.	(= 2)	Date	DEC 16	<u> 1997</u>	
CODE IDENT NO.	SIZE	NUMBER	REV	SREET 61 OF 68	
56348	Δ	1300922	D2		

Channel 4 LO

DRO (P/N: 1336610-4, S/N: 85038)

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS BILLIAL DATA SET FINAL DATA SET A

	DATA SET FINAL DATA	•
LITTON TYPE LS E 9036	AT/A	AESD 13366104
SERIAL NUMBER: 85038		
Basic Electrical Test: Ref. Test Para. 5	5.2.2	
SPECIFICATION	MEASUREMENT AT Inom	±1℃ LIMIT
Measurement at Vop=10 VDC	:	
Temperature	22.4 °C	Table IIIB
Input Voltage	1D.O VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	198 mA	Table IIIB
Input Power, P _{diss}		P _{diss} max
Frequency, f _{Tnom}	52.80022 GHz	Table IIIB
RF Output Power, P _{Tnom}		12 to 17 dBm
Frequency Setting Accuracy,		12 to 17 dbin
$\Delta f_S = f_{T_{nom}} - F_o$		
712 (- 11nom-Lo)		•
Fraguency and DE Output Dower Verin	ation With Voltage, Ref. Test Para 5.2.3	#
• •		-
Measurement at 9.5 VDC or at		T-LI- IIID
Temperature		Table IIIB
Input Voltage	<u> </u>	9.5 VDC or Para. 5.2.3.2
Input Current	196mA	Table IIIB
Frequency, f _{meas}	52.80012 GHz	Table IIIB
RF Output Power, P _{meas}	12.4dBm	12 to 17 dBm
Measurement at 10.5 VDC or at	VDC	
Temperature	°C	Table IIIB
Input Voltage		10.5 VDC or Para. 5.2.3.3
Input Current		Table IIIB
Frequency, f _{meas}	62,80022 GHz	Table IIIB
RF Output Power, Pmess	<u>, 2. 낙</u> dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_0$	mess - f _{Tnom} ,	•
Δf _V at 9.5 VDC or at	VDC =	
Δf _V at 10.5 VDC or at	VDC =	
21V at 10.5 V DC 01 at	······································	•
Calculate RF Output Power Variation,	$\Delta P_V = P_{\text{mess}} - P_{\text{Thoms}}$	
ΔP _V at 9.5 VDC or at	VDC =	
ΔP _V at 10.5 VDC or at	VDC =	
	Accept Reject	
Test Performed by	Date (2-3-47	
Litton QA (2.98)	Date DEC 0 9 1997	
(83)	<u> </u>	
CODE IDENT NO.	E NUMBER F	EV SHEET 38 OF 68
S6748		R3

LITTON SOLID STATE DIVISION / 3251 OLCOTT ST / SANTA CLARA, CA 95054

TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS FINAL DATA SET

	SET FINAL DA	
	1.	AESD 1336610 4
LITTON TYPE LS E 9036 AF	A CHALTEST	
SERIAL NUMBER: 85038	QUAL TEST	ACCEPT TEST
Temperature Testing at T=10°C, Ref.	Test Para. 5.2.5.1	
SPECIFICATION N	1EASUREMENT AT T=10°±1	°C LIMIT
Measurement at Vop=10 VDC	•	
Temperature	°C	10° ± 1°C
Input Voltage		$10.0 \pm 0.2 \text{ VDC}$
Input Current	197 mA	Table IIIB
Input Power, P _{diss}	W DC	Pdiss max
Frequency, f _{10°C}	52. ROISZ GHZ	Table IIIB
RF Output Power, P _{J0°C}	12.5 dBm	12 to 17 dBm
Frequency and RF Output Power Varia	ation With Voltage, Ref. Test Pa	ura 5.2.5.1
Measurement at 9.5 VDC or at	VDC	
Temperature	°C	Table IIIB
Input Voltage	9.5 VDC	💎 🦛 9.5 VDC or Para. 5.2.3.2
Input Current	(95 mA	- Table IIIB
Frequency, f _{mess}	52,80152 GHz	Table IIIB
RF Output Power, P _{mess}	725 dBm	12 to 17 dBm
ICI Output I ower, I mess		
Measurement at 10.5 VDC or at 10.5	VDC	
Temperature	100 °C	Table IIIB
Input Voltage	los VDC	10.5 VDC or Para. 5.2.3.3
Input Current	195 m&	Table IIIB
Frequency, f _{ment}	-52 8053 GHz	Table IIIB
RF Output Power, P	125 dBm	12 to 17 dBm
Calculate Frequency Variation, Afv	fuite - fio-c:	
Δf_{V} at 9.5 VDC or at	• • • • • • • • • • • • • • • • • • • •	HZ
Δf _V at 10.5 VDC or at		Hz: 🌿
Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - $f_{T_{10000}}$)	+1.30 M	IHz
Calculate RF Output Power Variation	$\Delta P_{V} = P_{\text{meas}} - P_{10^{\circ}C}$	
	VDC = <u> </u>	В
	VDC = <u> </u>	В
ΔP _T at 10.0 VDC (=P _{10*C} -P _{Tnom})	= <u>+,1</u> d	В
	Accept	Reject
Test Performed by	Date (2-3-6	37_
Litton Q.A.	Date DEC 0 9	-1007 -
(84)	<u> </u>	WI
CODE IDENT NO. SIZE	NUMBER	REV SHEET 39 OF 68
56348 A	1300823	B3
TITOLI COLID CTATE	ים מפורוצו ו זיבו הו בחדד פיו	APAPO AD A DA CA OCOCA

LITTON Solid State

TEST DATA SHEET 7.4

	ONAL PERFORMANO FINAL D		V
LITTON TYPE LS E 9036 AF/A SERIAL NUMBER: 85038	QUAL TEST		D 1336610- 4 EPT TEST V
Temperature Extreme Testing at Tmin, Ref	. Test Para. 5.2.5.2		
SPECIFICATION	MEASUREMENT AT	Tmin ±1°C	LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _{Tmin}	5 °C 10.0 VDC 196 mA 1.96 W DC 52.80219 GHz 12.5 dBm	,	Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or atVI Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	With Voltage, Ref. Test DC	t Para 5.2.5.2	Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or atV Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	/DC		Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{mess} - \Delta f_V$ at 9.5 VDC or at VDC = Δf_V at 10.5 VDC or at VDC = Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom}) Calculate RF Output Power Variation, ΔP_V =	+.t +.t	MHz	
ΔP_V at 9.5 VDC or at VDC = ΔP_V at 10.5 VDC or at VDC = ΔP_T at 10.0 VDC (= P_{Tmin} - P_{Tnom}) = Accep	φ 		
Test Performed by Litton Q.A.	Date 12-3	-47 1997	
CODE IDENT NO. SIZE A	NUMBER 1300823	REV B3	SPEET 40 OF 68

TEST DATA SHEET 7.5

Ľ		TIONAL PERFORMANI SET FINAL I		<u> </u>
LITTON TYPE LS <u>E</u> SERIAL NUMBER:	9036 AF/A 85038	QUAL TEST		1336610- <u>4</u> PT TEST <u>V</u>
Temperature Testing at T	=30°C, Ref. Tes	t Para. 5.2.5.3	•	
SPECIFICATION		MEASUREMENT A	T T=30° ±1°C	LIMIT
Measurement at Vop=10	VDC	5 / 25		200 - 190
Temperature		3o.6°C		30° ± 1°C
Input Voltage		VDC		$10.0 \pm 0.2 \text{ VDC}$
Input Current		198mA		Table IIIB
Input Power, Pdiss		W DC		Pdiss max
Frequency, f _{30°C}		52.79938 GHz	•	Table IIIB
RF Output Power, P _{30°C}		123dBm		12 to 17 dBm
Frequency and RF Outpu	ıt Power Variatio	on With Voltage, Ref. Tes	t Para 5.2.5.3	· -
Measurement at 9.5 VDC	or at	.VDC 30.6 ℃		Table IIIB
Temperature				9.5 VDC or Para. 5.2.3.2
Input Voltage				Table IIIB
Input Current				Table IIIB
Frequency, f_{meas}		52.79938 GHz		12 to 17 dBm
RF Output Power, P _{meas}		12.3dBm		12 to 17 ubin
Measurement at 10.5 VI	OC or at	_VDC		Table IIIB
Temperature		<u>30.6</u> ℃		10.5 VDC or Para. 5.2.3.3
Input Voltage		VDC		Table IIIB
Input Current		196 mA		Table IIIB
Frequency, f _{meas}		52.79938 GHz		12 to 17 dBm
RF Output Power, P _{mess}		12-3dBm		12 to 17 dbm
Calculate Frequency Van				•
Δf_V at 9.5 VDC or at		$\mathbf{C} = \frac{\varphi}{\varphi}$	_ MHz	
Δf_V at 10.5 VDC or at _)C =	_ MHz	
Δf_T at 10.0 VDC (= $f_{30^{\circ}C}$	-f _{Tnom})	=84	_ MHz	
Calculate RF Output Po				
ΔP_V at 9.5 VDC or at		$C = \frac{\varphi}{}$	_ dB	
ΔP_V at 10.5 VDC or at _	VI	$C = \frac{\phi}{\phi}$	_ dB	
ΔP_T at 10.0 VDC (= P_{30}	C-P _{Tnom})		_dB	
	,	Accept _	Rejec	et
Test Performed by _	1301		3-97)
Litton Q.A.	(100 k)	Date DEC 9	9 1997	
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 41 OF 68
56348	A	1300823	B3	

LITTON Solid State

		TEST DATA SHEET 7	CE TESTS	
INIT	TAL DATA	SET FINAL I	DATA SET _	V
LITTON TYPE LS <u>E 9</u> c	36 AF/A		AESI	0 1336610- 4
SERIAL NUMBER:8		QUAL TEST		EPT TEST
Temperature Extreme Testin	g at Tmax,	Ref. Test Para. 5.2.5.4		
SPECIFICATION		MEASUREMENT AT	[Tmax ±1°C	LIMIT
Measurement at Vop=10 VI)C			
Temperature	,,,	_44 °C		Table IIIB
Input Voltage		10.0 VDC		10.0 ± 0.2 VDC
Input Current		199 mA		Table IIIB
Input Power, P _{diss}		1.99 W DC		Pdiss max
		52.79826 GHz		Table IIIB
Frequency, f _{Tmax}				
RF Output Power, P _{Tmax}		12.2dBm	•	12 to 17 dBm
Frequency and RF Output Po			Para 5.2.5.4	
Measurement at 9.5 VDC or	at			-
Temperature		<u>44</u> .°C		Table IIIB
Input Voltage		Q.5VDC		9.5 VDC or Para 5.2.3.2
Input Current				Table IIIB
Frequency, f _{meas}		52.19826 GHz		Table IIIB
RF Output Power, Pmess		12.2 dBm		12 to 17 dBm
Measurement at 10.5 VDC o	ır at	VDC		
Temperature	1 at	_ 44 _ °C		Table IIIB
Input Voltage		10.5 VDC		10.5 VDC or Para 5.2.3.3
Input Current		52.798 (97 mA		Table IIIB
-				Table IIIB
Frequency, f _{meas}		52.798 26 GHz		
RF Output Power, P _{mess}		12.2dBm		12 to 17 dBm
Calculate Frequency Variation				•
Δf_V at 9.5 VDC or at	VI)C =	MHz	•,
Δf_V at 10.5 VDC or at	VI	XC = <u></u>	MHz	
Δf_T at 10.0V (= $f_{T_{max}}$ - $f_{T_{nom}}$)		= -1.96	MHz	
Calculate RF Output Power	Variation. Δ	$P_{V} = P_{max} - P_{Tran};$		
ΔP_V at 9.5 VDC or at		$\mathcal{C} = \mathcal{C}$	dB	
ΔP_V at 10.5 VDC or at		C = ϕ	dB	
ΔP_T at 10.0 VDC (= P_{Tmax} - P_T		=,Z	dB	
	A	ccept Reject		
Test Derformed her				
	OH O	Date <u>(2-3</u>	-7/	
Litton Q.A.	(10,4)	Date DEC U 5	1997	
CODE IDENT NO.	SIZE	NUMBER	REV	SPEET 42 OF 68
55348	Α	1300823	B3	

LITTON Solid State

TEST DATA SHEET 7.23B FUNCTIONAL PERFORMANCE TESTS

INI		ET FINAL		<u>/</u>	
TITTON TVDE IS =	9036 AT/A			AESD 1336610-	4
LITTON TYPE LS <u>E</u> SERIAL NUMBER:	85038	QUAL TEST	<u>.</u>	ACCEPT TEST	V
Frequency Pulling and Loa		max. all phases. Ref T	est Para. 5.9		
TEST DESCRIPTION			LIMIT	<u>S</u>	
Output Open and Short. R	ef. Test Para. 5.9	9.5			
Temperature	21.6	°C	24°C ±	: 5°C	
Frequency:	52.80080	GHz	Table I	IIB	
RF Output Power:	12.4	dBm	12 to 1	7 dBm	
Input Voltage	16	VDC	10 ± 0 .	2 VDC	
Input Current:	197	mA	Table I		
•		Acceptable		mage or Degradation	1
Results:			1.0 200		-
Calculate maximum Freque $\Delta f_{acc} = \Delta f_S$ (Use worst-calculate Maximum $\Delta f_{acc} =$	sency Accuracy se Δf_s from 7.2,	(both positive and nega 7.7, and 7.22A) + Δf_H MHz (Positive)	tive), (from 7.22A) + 2 Table I		
Viaximum Δi _{acc} –	01	MHz (Negative)	Table I		
Calculate maximum Short $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use we Maximum $\Delta f_{V+T} =$	orst-case Δf_V an $+1.98$	d Δf_T from 7.2 thru 7.6	e and negative);): Table I Table I		
Calculate maximum overa $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T} (Use V)$	ll RF Output Po worst-case ΔP _V a	ower Stability (both posend ΔP_T from 7.2 thru 7	itive and negative $(.6) + \Delta P_H$ (from	e), 7.22 A) + Δ P _L (from	7.23A):
Maximum $\Delta P_{OV} =$	+.4	dB (Positive)	1.0 dB		
	2	dB (Negative)	-1.0 dE	3	
	Ac	cept Reject _			
Test Performed by	DH	Date	12-5-97		
Litton Q.A.		Date		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
•			_		
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68	
56348		1300823	1 B3		

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		1		
LITTON / SOLII	STATE D	IVISION / 3251 OLCOTT	ST / SANTA	CLARA, CA 95054

Channel 5 LO

DRO (P/N: 1336610-5, S/N: 85029)

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS

INITIAL DAT	A SET FINAL DAT	TA SET	`
LITTON TYPE LS = 9036 AG/A SERIAL NUMBER: 35029	QUAL TEST	AESD 1336610- S ACCEPT TEST V	
Basic Electrical Test; Ref. Test Para. 5.2.2			
SPECIFICATION	MEASUREMENT AT Tro	om ±1°C LIMIT	
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P_{diss} Frequency, f_{Tnom} RF Output Power, P_{Tnom} Frequency Setting Accuracy, $\Delta f_S (= f_{Tnom} - F_o)$		Table IIIB 10.0 ± 0.2 VDC Table IIIB P _{diss} max Table IIIB 12 to 17 dBm	
Frequency and RF Output Power Variation W Measurement at 9.5 VDC or at 9.5 VD Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		Table IIIB 9.5 VDC or Para. 5.2.3. Table IIIB Table IIIB 12 to 17 dBm	.2
Measurement at 10.5 VDC or at	DC 	Table IIIB 10.5 VDC or Para. 5.2.2 Table IIIB Table IIIB 12 to 17 dBm	3.3
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ - f-	fnom»		
Δf_V at 9.5 VDC or at \underline{q} . VDC Δf_V at 10.5 VDC or at $\underline{f_{\theta}$. \underline{S}	7	IHz IHz	
Calculate RF Output Power Variation, $\Delta P_V =$	P _{meas} - P _{Tnom} ,		
ΔP_V at 9.5 VDC or at $\frac{Q_1 C}{\Delta P_V}$ VDC ΔP_V at 10.5 VDC or at $\frac{Q_1 C}{\Delta P_V}$	c =d dE		
Test Performed by Litton QA CODE IDENT NO. SIZE	Date 10/7/97 Date 0CT 1 6 1397 NUMBER	REV SHEET 38 OF 68	,
CODE IDENT NO. SIZE	NUMBER	KEV SHEET 38 OF 08	

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 38 OF 68
56348	A	1300823	B3	

TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS

INITI	FUN AL DATA	CTIONAL PERFORM SET FIN			<u> </u>
LITTON TYPE LS E 90 SERIAL NUMBER:	36 AG/A 5029	QUAL TEST			D 1336610 EPT TEST
Temperature Testing at T=10	O°C, Ref. 1	est Para. 5.2.5.1			
SPECIFICATION	М	EASUREMENT AT T	=10° ±1°C		LIMIT
Measurement at Vop=10 VD Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{10°C} RF Output Power, P _{10°C}	OC		DC		10° ± 1°C 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Po Measurement at 9.5 VDC or Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}		VDC 9,5°C 9,5V 183m 53,597169_G	C DC A	5.2.5.1	Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC o Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	rat <u>/0.5</u>		DC A		Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation Δf_V at 9.5 VDC or at $9.5 \times \Delta f_V$ at 10.5 VDC or at $9.5 \times \Delta f_T$ at 10.0 VDC (= $f_{10^{\circ}C}$ - $f_{T_{not}}$	VI VI	C =	MHz MHz MHz		
Calculate RF Output Power V ΔP_V at 9.5 VDC or at $\underline{Q_C}$ ΔP_V at 10.5 VDC or at $\underline{P_{C}}$ ΔP_T at 10.0 VDC (= $P_{10^{\circ}C}$ - P_{Tr}	VI VI	$P_{V} = P_{\text{meas}} - P_{10^{\circ}\text{C}}$ $OC = \emptyset$ $OC = \emptyset$ $OC = \emptyset$	dB dB dB		
Test Performed by	E E	Date _/	cept <u>/</u> o/7/9 7 1 6 1997	Re _	ject
CODE IDENT NO. 56348	SIZE A	NUMBER 1300823	RE		SHEET 39 OF 68

TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS

INITIA		ET FIN			<u>/</u>	_
LITTON TYPE LS <u>E 903</u>	L AG/A			AESD	تع ـــ -1336610	
SERIAL NUMBER: 850		QUAL TEST			PT TEST	-
Temperature Extreme Testing	at Tmin, F	Ref. Test Para. 5.2.5.2	2			
SPECIFICATION		MEASUREMEN	T AT Tr	nin ±1°C	LIMIT	
Measurement at Vop=10 VDC	2					
Temperature		-1.0 °	C		Table IIIB	
Input Voltage		V	/DC		$10.0 \pm 0.2 \text{ VDC}$	
Input Current		185 m	nΑ		Table IIIB	
Input Power, P _{diss}		1,85 V	V DC		Pdiss max	
Frequency, f _{Tmin}		53.597468	Hz		Table IIIB	
RF Output Power, P _{Tmin}			Bm		12 to 17 dBm	
Frequency and RF Output. Po	wer Variati	on With Voltage, Re	f. Test Pa	ara 5.2.5.2		
Measurement at 9.5 VDC or a	t <i>9.5</i>	VDC				
Temperature		-1,00	C		Table IIIB	
Input Voltage		<u>9.5</u> \	/DC		9.5 VDC or Para 5.2.3.2	
Input Current			nA		Table IIIB	_
Frequency, f _{meas}		53.5974780	3Hz		Table IIIB	
RF Output Power, P _{meas}		12.2 d			12 to 17 dBm	
Measurement at 10.5 VDC or	at /0.5	VDC				
Temperature		-1.0 °	С		Table IIIB	
Input Voltage		<u>/0.5</u> \	/DC		10.5 VDC or Para 5.2.3.	3
Input Current			nA		Table IIIB	
Frequency, f _{meas}		53,597486	3Hz		Table IIIB	
RF Output Power, P _{meas}		<u>/2.2</u> d	lBm		12 to 17 dBm	
Calculate Frequency Variation						
Δf_{V} at 9.5 VDC or at $g_{i} \leq g_{i}$		C = _	4.010			
Δf_V at 10.5 VDC or at 10.5		OC =	+,018			
Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnon}	")	_	t.69	<u>₽</u> MHz		
Calculate RF Output Power V			L	170		
ΔP_V at 9.5 VDC or at g		OC =	<u> 9</u>	dB		
ΔP_V at 10.5 VDC or at		OC =	9	dB		
ΔP_T at 10.0 VDC (= P_{Tmin} - P_{Tn}	om)	= _	<u> </u>	dB		
	Ad	ccept Rejec				
Test Performed by		Date	10/7/9			_
Litton Q.A.	(8)	Date UL	T 1 6 19	01		
CODE IDENT NO.	SIZE	NUMBER		REV	SHEET 40 OF 68	
56348	A	1300823		В3		

TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS NITIAL DATA SET

INITIAL DATA SE	T FINAL DATA S	SET
LITTON TYPE LS <u>E 9036 AG/A</u> SERIAL NUMBER: <u>85029</u>	QUAL TEST	AESD 1336610- S ACCEPT TEST
Temperature Testing at T=30°C, Ref. Test I	Para. 5.2.5.3	
SPECIFICATION	MEASUREMENT AT T=30°	±1°C LIMIT
Measurement at Vop=10 VDC		
Temperature	<i>3₀.ᢏ</i> °C	$30^{\circ} \pm 1^{\circ}C$
Input Voltage	/ <i>ð.o</i> VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current		Table IIIB
Input Power, P _{diss}		Pdiss max
Frequency, f _{30°C}	53.6-96372 GHz	Table IIIB
RF Output Power, P _{30°C}	dBm	12 to 17 dBm
Frequency and RF Output Power Variation Videasurement at 9.5 VDC or at	DC _	2.5.3
Temperature	<u>30.4</u> °C	Table IIIB
input Voltage	<u>9,5</u> VDC	9.5 VDC or Para. 5.2.3.2
Input Current		Table IIIB
Frequency, f _{meas}	53,596380 GHz	Table IIIB
RF Output Power, P _{meas}		12 to 17 dBm
Measurement at 10.5 VDC or at		
Temperature Temperature	<u>30. 2</u> °C	Table IIIB
nput Voltage	10,5 VDC	10.5 VDC or Para. 5.2.3.3
nput Current	/85 mA	Table IIIB
Frequency, f _{meas}	53.596386 GHz	Table IIIB
RF Output Power, P _{meas}	/2.3 dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{meas}$	[30°C;	
Δf_{V} at 9.5 VDC or at \mathcal{R}_{S} VDC =		
Δf_V at 10.5 VDC or at 10.5 VDC =		
Δf_{T} at 10.0 VDC (= $f_{30^{\circ}C}$ - f_{Tnom})	0	
Calculate RF Output Power Variation, ΔP _V =	= P _{mess} - P _{30°C} .:	
ΔP_{V} at 9.5 VDC or at g VDC =		
ΔP_{V} at 10.5 VDC or at 10.5 VDC =		
AP_{T} at 10.0 VDC (= $P_{30^{\circ}C}$ - P_{Tnom}) =	dB	
	Accept V	Reject
est Performed by	Date $(\theta/7/97)$	
Litton Q.A.	Date	- -
CODE IDENT NO. SIZE	NUMBER REV	V SHEET 41 OF 68

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 41 OF 68
56348	A	1300823	B3	

56348

TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS NITIAL DATA SET FINAL DATA SET

INITIAL DAT	'A SET FINAL DATA	SET
LITTON TYPE LS <u>E 9036 AG</u> SERIAL NUMBER: <u>85019</u>	ZAQUAL TEST	AESD 1336610- 5 ACCEPT TEST V
Temperature Extreme Testing at Tmax	c, Ref. Test Para. 5.2.5.4	
SPECIFICATION	MEASUREMENT AT Tma	ax ±1°C LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmax} RF Output Power, P _{Tmax}		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variate Measurement at 9.5 VDC or at		Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or at		Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
	$f_{meas} - f_{Tmax}$: /DC =	z
ΔP_{V} at 10.5 VDC or at P_{T} at 10.0 VDC (= $P_{T_{max}}$ - $P_{T_{nom}}$)	VDC =	
Test Performed by Litton Q.A.	Accept Reject Date /0/7/97 Date OCT 1 6 199	7
CODE IDENT NO. SIZE	NUMBER	REV SHEET 42 OF 68

1300823

LITTON / SOLID STATE DIVISION / 3251 OLCOTT ST / SANTA CLARA, CA 95054

B3

TEST DATA SHEET 7.23B

	FUNC	TIONAL PERFORMAN	CE TESTS	
INI	ΓIAL DATA S	ET FINAL D	DATA SET _	V
LITTON TYPE LS <u>E 9</u>	036 AG/A			AESD 1336610- 5
	85029	QUAL TEST		ACCEPT TEST
Frequency Pulling and Loa	d VSWR 2.5:1	max. all phases. Ref Tes	st Para. 5.9	
TEST DESCRIPTION			LIMI	TS
Output Open and Short. Re	f. Test Para. 5.	9.5		
Temperature	23.0	°C	24°C	± 5°C
Frequency:	53.59673		Table	
RF Output Power:	12,3	dBm		17 dBm
Input Voltage	10.0			0.2 VDC
Input Current:	186	mA	Table	
Results:	1/	Acceptable		amage or Degradation
Calculate maximum Freque $\Delta f_{acc} = \Delta f_S$ (Use worst-case Maximum $\Delta f_{acc} =$ Calculate maximum Short- $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use wo Maximum $\Delta f_{V+T} =$	term Frequency rst-case Δf_V an	MHz (Positive) MHz (Negative) y Stability (both positive a	rom 7.22A) + Table Table	IIIB IIIB IIIB
Calculate maximum overall $\Delta P_{OV} = \Delta P_V + \Delta P_T$ (Use w	I RF Output Poorst-case ΔP_V (ower Stability (both positiand ΔP_T from 7.2 thru 7.6	ve and negati) + ΔP _H (from	ve), n 7.22A) + ΔP _L (from 7.23A):
Maximum $\Delta P_{OV} =$	<u></u>	dB (Positive) .5 dB (Negative)	1.0 dI -1.0 d	
	Acc	cept Reject		
Test Performed by	7 #	Date	10/10/97	,
Litton Q.A.	(48LID)	Date 0	OCT 1 6 1997	
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 61 OF 68
5/3/0	1 4 1		l	1

Channel 6 LO

DRO (P/N: 1336610-6, S/N: 85024)

Solid State

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET ______ FINAL DATA SET ______

				-
LITTON TYPE LS E 903	ζ Δ μ / Δ		AES	D 1336610-6
SERIAL NUMBER: 850	27.	QUAL TEST		CEPT TEST
		Q0.1.2 1001 <u>J</u>		
Basic Electrical Test: Ref. Test	Para. 5.2.2		•	
SPECIFICATION		MEASUREMENT AT	Tnom ±1°C	LIMIT
Measurement at Vop=10 VDC				
Temperature		22 ℃		Table IIIB *
Input Voltage		10 VDC		10.0 ± 0.2 VDC
Input Current			;	Table IIIB
Input Power, P _{diss}		191 MA	•	-
Frequency, f _{Trom}			•	P _{diss} max
		54.400 08GHz		Table IIIB
RF Output Power, P _{Tnom}		dBm		12 to 17 dBm
Frequency Setting Accuracy,		O.ORMHz		
$\Delta f_{S} (= f_{Tnom} - F_{o})$				·
Frequency and RF Output Powe	er Variation With	h Voltage Ref Test Par	523	
Measurement at 9.5 VDC or at		ir voicege, itet. test tati	A J.E.J	
Temperature	VDC	<u>2</u> 2 °C		Table IIID
Input Voltage			:	Table IIIB
Input Voltage Input Current				9.5 VDC or Para. 5.2.3.2
		mA		Table IIIB
Frequency, f _{mess}	•	Etr rwos CHz	:	Table IIIB
RF Output Power, Pmess		<u>13.3</u> dBm		12 to 17 dBm
Measurement at 10.5 VDC or at	VDC	•		
Temperature	VIX	22°C		7 11 ****
input Voltage		1/00		Table IIIB
Input Current		VDC VDC		10.5 VDC or Para. 5.2.3.3
				Table IIIB
Frequency, f _{meas}		ट्रां-तेण्ये GHs		Table IIIB
RF Output Power, Pmess		<u>13.3</u> dBm		12 to 17 dBm
Calculate Frequency Variation,	$\Delta f_V = f_{meas} - f_{Too}$	· M >		
	•			
Afy at 9.5 VDC or at	VDC =		_MHz	
Mr at 10.5 VDC or at	_ VDC =		_MHz	
Calculate RF Output Power Var	iation, $\Delta P_V = P_m$	eas - P _{Triom} ,		
APv at 9.5 VDC or at	VDC =	_	מג	
AP _V at 10.5 VDC or at	VDC =		_dB	
ar var to 3 v DC or ar	_ VDC =		_dB	
	Acce	pt Reject	<u> </u>	
Test Performed by		Date 3-14-98		
itton QA		Date MAD 0 C 1000	-	
-(.3		MAR 2 6 1998	-	
CODE IDENTITIO	7,	- di		
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 38 OF 68
56348	A	1300823	B3	
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Solid State

TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS

FUNCTIONAL PERFORMANCE TESTS				
INITIAL DATA SET	N/A	FINAL DATA SET 🔍		

LITTON TYPE LS E 9036	NH/6		AESD	1336610- <u>6</u>
SERIAL NUMBER: 8502L	QUAL T	EST	ACCE	PT TEST
Temperature Testing at T=10°C. R	ef. Test Para 5.2.5	.1		
SPECIFICATION	MEASUREME!	NT AT T=10° ±1	°C	LIMIT
Measurement at Vop=10 VDC				
Temperature		°C		10° ± 1°C
Input Voltage	1	VDC	•	$10.0 \pm 0.2 \text{ VDC}$
Input Current	<u>a</u>	mA		Table IIIB
Input Power, P _{diss}	1.0	W DC		Pdiss max
Frequency, f _{10°C}	54.39	19 99 GHz		Table IIIB
RF Output Power, P _{10°C}	13	3.3 dBm		12 to 17 dBm
Frequency and RF Output Power V	ariation With Volt	age, Ref. Test Pa	ra 5.2.5.1	
Measurement at 9.5 VDC or at	VDC			
Temperature	Ls	<u></u> °C		Table IIIB
Input Voltage	9.	≤VDC		9.5 VDC or Para. 5.2.3.2
Input Current	18	a mA		Table IIIB
Frequency, f _{mess}	54,39	1999GHz	:	Table IIIB
RF Output Power, Pmeas	13	<u>≥</u> dBm		12 to 17 dBm
Measurement at 10.5 VDC or at	VDC			
Temperature		<u>></u> °C		Table IIIB
Input Voltage		≤ VDC		10.5 VDC or Para, 5.2.3.3
Input Current	18			Table IIIB
Frequency, f _{meas}		<u>o</u> ⇔ GHz		Table IIIB
RF Output Power, Pmess	1.	3.3 dBm		12 to 17 dBm
Calculate Frequency Variation, Δf _v	= f f_100c:		,	
Δf _V at 9.5 VDC or at	VDC = _	M	Hz	
Δf _V at 10.5 VDC or at	VDC =		Hz	
Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Tnom})	=		Hz	
- I - C - I I O C - I I I I I I I I I I I I I I I I I I				
Calculate RF Output Power Variati	on, $\Delta P_V = P_{meas} - P$	10°C.		
ΔP _V at 9.5 VDC or at	VDC =	dE	3	
ΔP _v at 10.5 VDC or at	VDC = _	dE	3	
ΔP_T at 10.0 VDC (= $P_{10^{\circ}C}$ - P_{Tnom})	· •	dE	3	
		Accept	Rejo	ect
Test Performed by	Z _e	ate 3-14-	98	
Litton Q.A.		ate MAR 2 (99	
			·	
CODE IDENT NO. SIZ	E NUM	BER	REV	SHEET 39 OF 68
56348 A	1300	823	B3	

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TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET N/A FINAL DATA SET

INITIAL DAT	A SET NAL DATA S	ET
LITTON TYPE LS <u>E 9036 A</u> SERIAL NUMBER: <u>8502L</u>		AESD 1336610- 6 ACCEPT TEST
Temperature Extreme Testing at Tmi	in. Ref. Test Para. 5.2.5.2	
SPECIFICATION	MEASUREMENT AT Train	EI°C LIMIT
Measurement at Vop=10 VDC		
Temperature	ల_ °С	Table IIIB
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	mA	Table IIIB
Input Power, P _{diss}	WDC	Pdiss max
Frequency, f _{Train}	54.39984 GHz	Table IIIB
RF Output Power, P _{Tmin}	(3,35 dBm	12 to 17 dBm.
To Calpari Ower, I Tmin	(3,35 ubiii	12 to 17 dBm.
Frequency and RF Output Power Va	riation With Voltage, Ref. Test Para 5.	2.5.2
Measurement at 9.5 VDC or at		
Temperature	°C	Table IIIB
Input Voltage	9.5 VDC	9.5 VDC or Para 5.2.3.2
Input Current		Table IIIB
Frequency, f _{meas}	64.3998L GHz	Table IIIB
RF Output Power, P _{meas}	13.35 dBm	12 to 17 dBm
	-	
Measurement at 10.5 VDC or at	VDC	
Temperature	°C	Table IIIB
Input Voltage	VDC	10.5 VDC or Para 5.2.3.3
Input Current		Table IIIB
Frequency, f _{meas}	54.39985 GHz	Table IIIB
RF Output Power, Pmess	<u>13.35</u> dBm	12 to 17 dBm
Calculate Frequency Variation, Δf _V =	of ← f	
		IH2
	1/00	
Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom})		IHz IH2
Calculate RF Output Power Variation	, $\Delta P_V = P_{meas} - P_{Trajin}$:	
ΔP_V at 9.5 VDC or at		iB
ΔP_{V} at 10.5 VDC or at	VDC =	iB
ΔP_T at 10.0 VDC (= $P_{Tmin} - P_{Tnom}$)	0.05	
	Assemb	
Tana Dankasus ad las.	AcceptReject	
Litton Q.A.	Date 3-14-98	
Litton Q.A.	Date MAR 2 0 1990	
CODE IDENT NO. ('SIZE'	NUMBER REV	SHEET 40 OF 68
56348 A	1300823 B3	
LITTON / SOI ID STATE	DIVISION / 2051 OF COTT ST / SAN	ITA CLABA CA 05054

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TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET

INIT	IAL DAIA	SEI NA FINALI	JAIA SEI _		
LITTON TYPE LSE 90.	36 A4 /	Δ .	AESI	D 1336610- &	
SERIAL NUMBER: 8:	•	QUAL TEST		EPT TEST NA	
Temperature Testing at T=3	0°C. Ref. Te	st Para. 5.2.5.3	1 1		
SPECIFICATION		MEASUREMENT A	T T=30° ±1°C	LIMIT	
Measurement at Vop=10 VI	C				
Temperature		<u></u> °C		30° ± 1°C	
Input Voltage		VDC		$10.0 \pm 0.2 \text{ VDC}$	
Input Current		IGA MA	+ 1	Table IIIB	
Input Power, P _{diss}	•	1. 92 W DC		Pdiss max	
Frequency, f _{30°C}		54.40622 GHz		Table IIIB	
RF Output Power. P _{30°C}		13.2 dBm		12 to 17 dBm	
Frequency and RF Output P	ower Variati	on With Voltage, Ref. Tes	rt Para 5.2.5.3		
Measurement at 9.5 VDC or					
Temperature		°℃		Table IIIB	
Input Voltage		9.5 VDC		9.5 VDC or Para, 5.2.3.2	
Input Current		190 mA		Table IIIB	
Frequency, f _{meas}		54.40023 GHz		Table IIIB)
RF Output Power, P _{meas}		13.2 dBm		12 to 17 dBm	
rd Output Fower, Fmeas					
Measurement at 10.5 VDC of	or at	VDC			
Temperature		<u>3</u> °C		Table IIIB	
Input Voltage		<u> 0.5</u> VDC		10.5 VDC or Para. 5.2.3.3	
Input Current				Table IIIB	
Frequency, f _{meas}		<u>54. 40023</u> GHz		Table IIIB	
RF Output Power, Pmeas		dBm		12 to 17 dBm	
Calculate Frequency Variati	on, Δf _V = f _m	ne - f _{30°C} ;			
Δf _V at 9.5 VDC or at			MHz		
Δf_V at 10.5 VDC or at	VI	OC = 0.01	MHz		
Δf_T at 10.0 VDC (= $f_{30^{\circ}C}$ - f_{To}	om)	= 0.15	MHz		
Calculate RF Output Power	Variation, Δ	$P_{V} = P_{meas} - P_{30 \cdot C}$			
ΔP _V at 9.5 VDC or at		OC =	_dB		
ΔP _V at 10.5 VDC or at		OC =	_d B		
ΔP_T at 10.0 VDC (= $P_{30^{\circ}C}$ -P-		0.1	_dB		
		Accept _	Rejec	ot	
Test Performed by	m/a	Date 3-14	-9k		
Litton Q.A.	(8)	Date MAR	2 0 /996		
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 41 OF 68	
56348	A	1300823	B3	GILLET 41 OF 08	
				<u> </u>	

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TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET ______ FINAL DATA SET ______

LITTON TYPE LS E 90	36 AH/	A		SD 1336610- <u>6</u>
SERIAL NUMBER: 8	5024	QUAL TEST	AC	CEPT TEST NA
Temperature Extreme Testi	ng at Tmax.	Ref. Test Para. 5.2.5.4		· · · · -
SPECIFICATION		MEASUREMENT A	AT Tmax ±1%	LIMIT
Measurement at Vop=10 V	DC		•	
Temperature		<u> 44</u> °C		Table IIIB
Input Voltage		VDC	}	$10.0 \pm 0.2 \text{ VDC}$
Input Current		192 mA		Table IIIB
Input Power, P _{diss}		1.92 WD	C	Pdiss max
Frequency, f _{Tmax}		<u>54. 39999</u> GHz	4	Table IIIB
RF Output Power, P _{Tmax}		<u> </u>	:	12 to 17 dBm
Frequency and RF Output F Measurement at 9.5 VDC of			st Para 5.2.5.4	•
Temperature		<u>44.</u> °C		Table IIIB
Input Voltage		9.5 VDC		9.5 VDC or Para 5.2.3.2
Input Current		191 mA	1	Table IIIB
Frequency, f _{meas}		<u>54.39998</u> GHz	!	Table IIIB
RF Output Power, Pmess		dBm	•	12 to 17 dBm
Measurement at 10.5 VDC		- VDC		
Measurement at 10.5 VDC (Temperature	or at			
Input Voltage		<u> </u>	·	Table IIIB
Input Current				10.5 VDC or Para 5.2.3.3
Frequency, f _{mess}		191 mA		Table IIIB
RF Output Power, Pmeas		<u>54. 29 99</u> GHz		Table IIIB
. a output 1 ovol, 1 meas		13dBm		12 to 17 dBm
Calculate Frequency Variati	on, $\Delta f_V = f_m$	eas - f _{Tmax} :		
Δf_V at 9.5 VDC or at $\underline{\hspace{1cm}}$	<u> </u>)C =	_MHz	
Δf_V at 10.5 VDC or at $\underline{\hspace{1cm}}$	VI)C =	_MHz ·	
Δf_T at 10.0V (= f_{Tmax} - f_{Tnom})		_ 0.09	_ MHz	
Calculate RF Output Power	Variation A	D = D . D .	•	
$\Delta P_{\rm V}$ at 9.5 VDC or at	Variation, 2	OC =	₫B	
ΔP _V at 10.5 VDC or at		OC = 0	_dB	
ΔP_T at 10.0 VDC (= P_{Tmax} - P			_dB	
I we told you can a times a	I nom/	0.3	_ (13)	
	Α	ccept Reject	:	
	21/1/2	Date 3	4-98	
Litton Q.A.	4/	Date MAR	2 6 1998	
	460			
CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 42 OF 68
56348	Α	1300823	B3	
1.0000011100110				<u> </u>

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TEST DATA SHEET 7.7 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET NA FINAL DATA SET

LITTON TYPE LS E 9036AH/A SERIAL NUMBER: 25024 Q	AESD 1336 UAL TEST ACCEPT TEST	610- 6
Power Supply Immunity, Ref. Test Para. 5.2.4	;	
SPECIFICATION	MEASUREMENT AT Tnom ±1℃	LIMIT
Initial Measurement		
Temperature	<u></u> °C	Table IIIB
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$
input Current	mA	Table IIIB
Input Power	1.91 W DC	Pdiss max
Frequency (f _{Tnom})	574. 400 27 GHz	Table IIIB
RF Output Power		12 to 17 dBm
Frequency Setting Accuracy, Δf_s (= $f_{T_{noon}}$ - F_o)	<u>0. 27</u> MH2	
Performance After Short Circuit on Power Sup	ply: Ref Test Para 5.2.4.2	
Input Voltage	VDC :	10.0 ± 0.2 VDC
Input Current	192 mA	Table IIIB
Input Power	1.92 W DC	Pdiss max
Frequency	54.40022 GHz	Table IIIB
RF Output Power	33 dBm	12 to 17 dBm
Over Voltage: Ref Test Para 5.2.4.3		
Overvoltage Input Voltage	28VDC	+28V
Performance After Input Overvoltage		
Input Voitage	VDC	10.0 ± 0.2 VDC
Input Current	<u>191</u> mA	Table IIIB
Input Power	WDC	Pdiss max
Frequency	54.40025 GHz	Table IIIB
RF Output Power	13dBm	12 to 17 dBm
Reverse Polarity: Ref Test Para 5.2.4.4		
Reverse Input Voltage	VDC	$-10.0 \pm 0.2 \text{ VDC}$
Performance After Reverse Input Voltage		
Input Voltage	10 VDC	10.0 ± 0.2 VDC
Input Current	191 mA	Table IIIB
Input Power	1.91 W DC	Pdiss max
Frequency, f _{Taom}	54.40023 GHz	Table !IIB
RF Output Power	13.3 dBm	12 to 17 dBm
Frequency Setting Accuracy, Δf_{ς} (# f_{Taom} - F_{o})	0.23 MHz	
_	Accept Reject	
Test Performed by 1004	Date 3-14-98	
Litton Q.A.	Date MAR 2 0 1998	
COOCIDENTANO	MADEN	LOTTE 10 0
CODE IDENT NO.	NUMBER REV	SHEET 43 OF 68
56348 A	1300823 B3	
I ITTON! / SOI ID STATE P	TVISION / 3251 OF COTT ST / SANT	CA CT ADA CA DEDEA

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ni.	FUNCTIO	ST DATA SHEET 7 NAL PERFORMAN PA FINAL	VCE TESTS	
LITTON TYPE LSE 90 SERIAL NUMBER: 8:	36 AH/A 5024 (QUAL TEST		336610- <u>6</u> T TEST <u>u/a</u>
Frequency Pulling and Loa	d VSWR 2.5:1 ma	x. all phases. Ref T	est Para. 5.9	
TEST DESCRIPTION			LIMITS	
Output Open and Short. Re	f. Test Para: 5.9.5			
Temperature Frequency: RF Output Power: Input Voltage Input Current: Results: Calculate maximum Freque $\Delta f_{acc} = \Delta f_S \text{ (Use worst-case)}$ Maximum $\Delta f_{acc} = \Delta f_{cc}$ Calculate maximum Short-t $\Delta f_{V+T} = \Delta f_V + \Delta f_T \text{ (Use worst)}$	Proceedings of the Process of the P	iHz Bm DC AA .cceptable th positive and negat , and 7.22A) + Δf _H (MHz (Positive) MHz (Negative) shility (both positive	from 7.22A) + Δf _L (from Table IIIB Table IIIB and negative),	
Maximum $\Delta f_{V+T} =$		MHz (Positive) MHz (Negative)	Table IIIB Table IIIB	
Calculate maximum overall $\Delta P_{OV} = \Delta P_V + \Delta P_T$ (Use we	RF Output Power orst-case ΔP_V and ℓ	Stability (both posit \Dr from 7.2 thru 7.0	ive and negative), $6) + \Delta P_H$ (from 7.22A) +	ΔP _L (from 7.23A):
Maximum ΔP _{OV} =	<u>0.35</u> d	IB (Positive) IB (Negative)	1.0 dB -1.0 dB	
	Accept	Reject		
Test Performed by	ди	Date	3-17-98	
Litton Q.A.	(UT 7N)	Date	MAR 2 0 1998	
CODE IDENT NO.	SIZE	NUMBER	REV SHEET	1 05 40

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NUMBER

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SHEET 61 OF 68

Channel 7 LO

DRO (P/N: 1336610-7, S/N: 85022)

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET _____ FINAL DATA SET _____

LITTON TYPE LS E 9036 AJ	/A	AESD 1336610
SERIAL NUMBER: 85022	QUAL TEST	ACCEPT TEST
Basic Electrical Test; Ref. Test Para. 5.	2.2	
SPECIFICATION	MEASUREMENT AT Inc	om ±1°C LIMIT
Measurement at Vop=10 VDC		
Temperature	<u>21.6</u> °C	Table IIIB
Input Voltage		$10.0 \pm 0.2 \text{ VDC}$
Input Current	<u></u>	Table IIIB
Input Power, P _{diss}		P _{diss} max
Frequency, f _{Tnom}	<u>54,919960</u> GHz	Table IIIB
RF Output Power, P _{Tnom}	<i>/ 2.8</i> dBm	12 to 17 dBm
Frequency Setting Accuracy,	<u> </u>	
$\Delta f_{S} (= f_{Tnom} - F_{o})$		•
Frequency and RF Output Power Variat	ion With Voltage, Ref. Test Para 5.2	.3
Measurement at 9.5 VDC or at 7.50		
Temperature . Input Voltage		Table IIIB
Input Current		9.5 VDC or Para. 5.2.3.2
Frequency, f _{mess}		Table IIIB
RF Output Power, P _{meas}	<u>54.939960</u> GHz	Table IIIB
Re Output Fower, F _{mess}		12 to 17 dBm
Measurement at 10.5 VDC or at	T VDC	
Temperature	2/.7°C	Table IIIB
Input Voltage	10,50 VDC	10.5 VDC or Para. 5.2.3.3
Input Current		Table IIIB
Frequency, f _{meas}	54.939960 GHz	Table IIIB
RF Output Power, P _{meas}	dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{me}$	saa - f _{Tnom} ,	
Δf_V at 9.5 VDC or at 4.5	VDC =MI	Īz
Δf _V at 10.5 VDC or at 10.5	VDC = MIH	Iz
Calculate RF Output Power Variation, Δ	$P_V = P_{\text{meas}} - P_{\text{Tnorm}}$	
ΔP _V at 9.5 VDC or at 9.5	1mc - 4 :-	
	VDC = dB	
Al Val 10.5 VDC of at	VDC =dB	•
	Accept Reject	_
Test Performed by	Date 9/8/97	
Litton QA	Date SEP 2 5 1997	
MUN	441 4 3 531	
CODE IDENT NO. SIZE	NUMBER	REV SHEET 38 OF 68
56348 A	1300823	B2 SHEET 38 OF 68
ELLIOIT/ SOLID STATE	DIVISION / 3251 OLCOTT ST /	Danta Claka, CA 95054

Solid State

TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS

	TA SET FINAL DATA	
TITTONITY DELCE 9-3/ AT	//	AESD 1336610- 7
LITTON TYPE LS <u>E 9036 AJ/</u> SERIAL NUMBER: <u>85022</u>		ACCEPT TEST
SERIAL NOVIDER. 45022		
Temperature Testing at T=10°C, R	Lef. Test Para. 5.2.5.1	
SPECIFICATION	MEASUREMENT AT T=10° ±1°C	LIMIT
Measurement at Vop=10 VDC		
Temperature	<u>°</u> C	10° ± 1°C
Input Voltage		$10.0 \pm 0.2 \text{ VDC}$
Input Current		Table IIIB
Input Power, P _{diss}	/. <i>93</i> WDC	Pdiss max
Frequency, f _{10°C}	54,939392 GHz	Table IIIB
RF Output Power, P _{10°C}	/2.7 dBm	12 to 17 dBm
Frequency and RF Output Power V	Variation With Voltage, Ref. Test Para 5	.2.5.1
Measurement at 9.5 VDC or at	10.6 °C	Table IIIB
Temperature	9.50 VDC	9.5 VDC or Para. 5.2.3.2
Input Voltage	19/ mA	Table IIIB
Input Current	54.939392 GHz	Table IIIB
Frequency, f _{meas} RF Output Power, P _{meas}		12 to 17 dBm
Rr Output rower, r meas		
Measurement at 10.5 VDC or at	/o.s_ VDC	
Temperature	°C	Table IIIB
Input Voltage		10.5 VDC or Para. 5.2.3.3
Input Current		Table IIIB
Frequency, f _{mess}	<u>54.93939/</u> GHz	Table IIIB
RF Output Power, Pmess		12 to 17 dBm
Calculate Frequency Variation, Δf _V		
$\Delta f_{\rm V}$ at 9.5 VDC or at q.5_	VDC = Ø MHz	
Δf_V at 10.5 VDC or at <u>10.5</u>	VDC = MHz	
Δf_T at 10.0 VDC (= $f_{T_{min}}$ - $f_{H^{me}}$)	= <u>569</u> MHz	
Calculate RF Output Power Variati		
$\Delta P_{\rm V}$ at 9.5 VDC or at 9.5	VDC = dB	
ΔP _V at 10.5 VDC or at _/0.5	VDC =	
ΔP_T at 10.0 VDC (= P_{Train} - P_{100C})	- ~,/ dB	• •
AC TNORM		
	Accept	Reject
Test Performed by	Date	
Litton Q.A.	Date <u>SEP 2 5 1997</u>	ل
Meter		THE COURT TO OF CO
CODE IDENT NO.	1000000	SHEET 39 OF 68
56348 A		ANTA CLARA CA 95054
LITTON / SOLID STA	TE DIVISION / 3251 OLCOTT ST / SA	21117 CPUTCH, CW 33034

Solid State

TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

	INITIAL DATA SET		FINAL DATA	SET_				
LITTON TYPE LS J SERIAL NUMBER:	E 9036 AJ/A 85022	QUAL TEST	Γ		D 1336610- 7 EPT TEST			
Temperature Extreme Testing at Tmin, Ref. Test Para. 5.2.5.2								
SPECIFICATION		MEASUREN	MENT AT Tmi	n±l°C	LIMIT			
Measurement at Vope Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmin} RF Output Power, P _T		-0.8 10.00 192 1.92 54.938654 12.6	_°C _VDC _mA WDC /GHz _dBm		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm			
· ·	atput Power Variation /DC or at <u>4.5</u> VI		_ °C _ VDC _ mA	5.2.5.2	Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm			
Measurement at 10.5 Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _m	VDC or at <u>/o.s</u> V	DC -0,9 19,1 54,93864 126			Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm			
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tmin}$: $\Delta f_V \text{ at } 9.5 \text{ VDC or at } \underline{9.5} \text{ VDC} = \underline{-0.05} \text{ MHz}$ $\Delta f_V \text{ at } 10.5 \text{ VDC or at } \underline{10.5} \text{ VDC} = \underline{-0.05} \text{ MHz}$ $\Delta f_T \text{ at } 10.0 \text{ VDC } (=f_{Tmin} - f_{Tnom})$								
Calculate RF Output Power Variation, $\Delta P_V = P_{mess} - P_{Tmin}$: $\Delta P_V \text{ at 9.5 VDC or at } \underline{9.5} \text{VDC} = \underline{0} \text{dB}$ $\Delta P_V \text{ at 10.5 VDC or at } \underline{10.5} \text{VDC} = \underline{0} \text{dB}$ $\Delta P_T \text{ at 10.0 VDC } (=P_{Tmin} - P_{Tnom}) = \underline{0} \text{dB}$								
Test Performed by Litton Q.A. Accept V Reject Date 9/9/9 7 Date SEP'2 5 1897								
CODE IDENT NO. 56348	SIZE A SOLID STATE DIVIS	NUMBER 1300823 ION / 3251 O	E	EV 32 ANTA (SHEET 40 OF 68			

TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS

INITIAL DATA SE	T V FINAL D	ATA SET					
LITTON TYPE LS E 90-36 AJ/A		AESD	1336610- 7				
SERIAL NUMBER: 85022	QUAL TEST		EPT TEST \checkmark				
							
Temperature Testing at T=30°C, Ref. Test I	Para. 5.2.5.3						
SPECIFICATION	MEASUREMENT AT	T=30° ±1°C	LIMIT				
Measurement at Vop=10 VDC							
Temperature	<i>30</i> °€		30° ± 1°C				
Input Voltage	10.00 VDC		10.0 ± 0.2 VDC				
Input Current	195 mA		Table IIIB				
Input Power, P _{diss}	1.95 WDC		Pdiss max				
Frequency, f _{30°C}	54.940344 GHz		Table IIIB				
RF Output Power, P _{30*C}	/2.8 dBm		12 to 17 dBm				
14 Osipat 1 Over, 1 3000							
Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.3							
Measurement at 9.5 VDC or at 9.5 V	DC						
Temperature	<u>29.7</u> °C		Table IIIB				
Input Voltage	9.50 VDC		9.5 VDC or Para. 5.2.3.2				
Input Current			Table IIIB				
Frequency, f _{mess}	54.940338 GHz		Table IIIB				
RF Output Power, Pmess	/2.8dBm		12 to 17 dBm				
Measurement at 10.5 VDC or at/o.5 VDC							
Temperature	<u>29.6</u> °C		Table IIIB				
Input Voltage	VDC		10.5 VDC or Para. 5.2.3.3				
Input Current			Table IIIB				
Frequency, f _{meas}	<u>54.940330</u> GHz		Table IIIB				
RF Output Power, P _{meas}	/2.8dBm		12 to 17 dBm				
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{30^{\circ}C}$:							
Δf _v at 9.5 VDC or at 9.5 VDC =		MHz	·				
Δf _v at 10.5 VDC or at 10.5 VDC =	014	MHz					
Δf_T at 10.0 VDC (= $f_{Tmin} - f_{300C}$)	+ 0.384	MHz					
Calculate RF Output Power Variation, ΔP _V	= P P_209C;						
ΔP _v at 9.5 VDC or at 9.5 VDC:		dB					
ΔP _v at 10.5 VDC or at 10.5 VDC:		dB					
ΔP_T at 10.0 VDC (= P_{Train} - P_{30-e})		dB					
30E THORM		_					
	Accept	Reject	· · · · · · · · · · · · · · · · · · ·				
Test Performed by Dat	Date	97					
Litton Q.A.	Date SEP 2 5	1997					
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CODE IDENT NO. SIZE 56348 A	NUMBER 1300823	B2	SHEET 41 OF 68				
LITTON / SOLID STATE DIVIS			CLARA, CA 95054				

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TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS

INITIAL DATA SE	T FINAL DATA SET	
LITTON TYPE LS E 90 36 AJ/A		SD 1336610
SERIAL NUMBER: 85022	QUAL TEST AC	CEPT TEST
Temperature Extreme Testing at Tmax, Ref.	Test Para. 5.2.5.4	
SPECIFICATION	MEASUREMENT AT Tmax ±1°	C LIMIT
Measurement at Vop=10 VDC		
Temperature	<u>4+.o_</u> ℃	Table IIIB
Input Voltage		$10.0 \pm 0.2 \text{ VDC}$
Input Current	(96 mA	Table IIIB
Input Power, P _{diss}	1.96 W DC	Pdiss max
Frequency, f _{Tmax}	54.940336 GHz	Table IIIB
RF Output Power, P _{Tmax}	/2.8 dBm	12 to 17 dBm
To Catput I Ower, I Tmax	upm	12 to 17 to m
Frequency and RF Output Power Variation V	With Voltage, Ref. Test Para 5.2.5.	4
Measurement at 9.5 VDC or at VI	DC	
Temperature	<i>44.6</i> °C	Table IIIB
Input Voltage	9,49 VDC	9.5 VDC or Para 5.2.3.2
Input Current	/94 mA	Table IIIB
Frequency, f _{meas}	54,940333 GHz	Table IIIB
RF Output Power, P _{meas}	(2.8 dBm	12 to 17 dBm
reas caspact over, 1 meas	dbiii	12 to 17 dish
Measurement at 10.5 VDC or at V	/DC	
Temperature	<i>44.9</i>	Table IIIB
Input Voltage	10,50 VDC	10.5 VDC or Para 5.2.3.3
Input Current		Table IIIB
Frequency, f _{meas}	54 940328 GHz	Table IIIB
RF Output Power, P _{meas}	/2.8 dBm	12 to 17 dBm
Ta output 1 ovor, 1 mess		12 to 17 dbii
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ -	f _{Tmex} :	
Δf_v at 9.5 VDC or at 9.5 VDC =		
Δf_V at 10.5 VDC or at 10.5 VDC =		
Δf_T at 10.0V (= f_{Total} - f_{Total}) =	+ 0.376 MHz	
THEY THORM	<u> + 0,376</u>	
Calculate RF Output Power Variation, $\Delta P_V =$	P _{mess} - P _{Tnom} :	
ΔP_v at 9.5 VDC or at 9.5 VDC =		
ΔP_{v} at 10.5 VDC or at 10.5 VDC =	dB	
ΔP_T at 10.0 VDC (= P_{max} - $P_{T_{max}}$) =	₩ dB	
THAX THOUM		
Accep	t <u> </u>	
Test Performed by	Date 9/8/47	
Litton Q.A.	Date SEP 2 5 1997	
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LITTON Solid State

TEST DATA SHEET 7.23B

INITIA	FUNCTIONAL PER AL DATA SET		
LITTON TYPE LS <u>E 903</u> SERIAL NUMBER: <u>&</u>	6 AJ/A 5022 QUAL TE	est	AESD 1336610- 7 ACCEPT TEST
Frequency Pulling and Load	VSWR 2.5:1 max. all pha	ses. Ref Test Para.	5.9
TEST DESCRIPTION			LIMITS
Output Open and Short. Ref.	Test Para. 5.9.5		
Temperature Frequency: RF Output Power: Input Voltage Input Current: Results:	24.0 °C 54.939945 GHz 12.6 dBm 10.00 VDC 194 mA Acceptable		24°C ± 5°C Table IIIB 12 to 17 dBm 10 ± 0.2 VDC Table IIIB No Damage or Degradation
Calculate maximum Frequence $\Delta f_{acc} = \Delta f_S$ (Use worst-case A			$2A) + \Delta f_L \text{ (from 7.23A)}$:
Maximum $\Delta f_{acc} =$	+ 8.274 MHz (Pos - 6397 MHz (Ne	sitive) gative)	Table IIIB Table IIIB
Calculate maximum Short-ter $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use worst	rm Frequency Stability (bo	oth positive and neg	ative),
Maximum $\Delta f_{V+T} =$	+0.384 MHz (Pos -1.356 MHz (Ne	/	Table IIIB Table IIIB
Calculate maximum overall F $\Delta P_{OV} = \Delta P_{V} + \Delta P_{T}$ (Use wor	UF Output Power Stability st-case ΔP_V and ΔP_T from	(both positive and a 7.2 thru 7.6) + ΔP_{H}	negative), (from 7.22A) + ΔP_L (from 7.23A):
Maximum $\Delta P_{OV} =$	+ <u>005</u> dB (Posit - 0.3 dB (Nega	ive) utive)	1.0 dB -1.0 dB
	Accept	_ Reject	~ ** **
Test Performed by	OH (100)	Date9	111/97
Litton Q.A.	<u> </u>	Date \$EP	2 5: 1007

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Channel 8 LO

DRO (P/N: 1336610-8, S/N: 85076)

Channel 8 LO

DRO (P/N: 1336610-8, S/N: 85076)

LITTON Solid State

TEST DATA SHEET 7.2

	ONAL PERFORMANCE TES SET FINAL DATA S	,
LITTON TYPE LS <u>E 9036 AK/A</u> SERIAL NUMBER: <u>85016</u>	QUAL TEST	AESD 1336610- & ACCEPT TEST
Basic Electrical Test; Ref. Test Para. 5.2.2		
SPECIFICATION	MEASUREMENT AT Tnom ±	L'C LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P_{diss} Frequency, f_{Tnom} RF Output Power, P_{Tnom} Frequency Setting Accuracy, Δf_S (= f_{Tnom} - F_o)		Table IIIB 10.0 ± 0.2 VDC Table IIIB P _{diss} max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation With Measurement at 9.5 VDC or at Q.5 VDC Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	Noltage, Ref. Test Para 5.2.3 21.0 °C 9.50 VDC 193 mA 55.50075 GHz 13.0 dBm	Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or at 10.5 VDC Temperature Input Voltage Input Current Frequency, f_{meas} RF Output Power, P_{meas}	21.0 °C (0.50 VDC (0.50 TMA 55.500779 GHz 13.0 dBm	Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tnoi}$	m,	
Δf_V at 9.5 VDC or at <u>q.5</u> VDC = Δf_V at 10.5 VDC or at <u>vp.5</u> VDC =		
Calculate RF Output Power Variation, $\Delta P_V = P_{\pi}$	neas - P _{Tnom} ,	
ΔP_V at 9.5 VDC or at $\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $		
Acce	ept Reject	
Test Performed by Litton QA	Date 9/22/47 Date SEP 2 5 897.	

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TEST DATA SHEET 7.3

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		A FOD 1226610 0
LITTON TYPE LS E 9036 AK	/A	AESD 1336610- &
SERIAL NUMBER: 85076	QUAL TEST	ACCEPT TEST
Temperature Testing at T=10°C, Re	f. Test Para. 5.2.5.1	
SPECIFICATION	MEASUREMENT AT T=10° ±1°C	LIMIT
Measurement at Vop=10 VDC		
Temperature	<u>(0.5</u> °C	10° ± 1°C
Input Voltage	10.00 VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	194 mA	Table IIIB
Input Power, P _{diss}	1.94 W DC	Pdiss max
Frequency, $f_{10^{\circ}C}$	55.499973 GHz	Table IIIB
RF Output Power, P _{10°C}	13.1 dBm	12 to 17 dBm
Frequency and RF Output Power Va Measurement at 9.5 VDC or at	riation With Voltage, Ref. Test Para S VDC	5.2.5.1
Temperature		Table IIIB
Input Voltage	9.50 VDC	9.5 VDC or Para. 5.2.3.2
Input Current	192 mA	Table IIIB
Frequency, f _{meas}	55. 499970 GHz	Table IIIB
RF Output Power, P _{meas}	13.1 dBm	12 to 17 dBm
• '**-		
Measurement at 10.5 VDC or at	<u>5.5</u> VDC	Table IIID
Temperature	10.5 °C	Table IIIB
Input Voltage	10.50 VDC	10.5 VDC or Para. 5.2.3.3
Input Current		Table IIIB
Frequency, f _{meas}	55.499 a 81 GHz	Table IIIB
RF Output Power, P _{meas}	<u>13.1</u> dBm	12 to 17 dBm
Calculate Frequency Variation, Δf _V =	= f f_10°C;	
Δf_v at 9.5 VDC or at9.5	VDC = MH2	2
Δf _v at 10.5 VDC or at 10.5	VDC = +.00 8 MHz	2
Δf_T at 10.0 VDC (= $f_{T_{min}}$ - $f_{10^{\circ}C}$)	= MHz	2
TIO'S - THORM		
Calculate RF Output Power Variation		
ΔP_V at 9.5 VDC or at9.5	$VDC = \frac{\phi}{dB}$	
ΔP_{V} at 10.5 VDC or at <u>10.5</u>	$VDC = \underline{\phi} dB$	
ΔP _T at 10.0 VDC (=P _{Train} -P _{10°C})	= <u>+•/</u> dB	
10°C THERM	Accept	Reject
Test Performed by	Date 9/22/97	,
Litton Q.A.	Date SEP 2: 5 1997	

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TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET FINAL DATA SET

	FINAL D		<u> </u>
LITTON TYPE LS E 9036 AK/A		AEST	13366108
SERIAL NUMBER: 85076	QUAL TEST		EPT TEST
Temperature Extreme Testing at Tmin, Re	f. Test Para. 5.2.5.2		
SPECIFICATION	MEASUREMENT AT	Tmin ±1°C	LIMIT
Measurement at Vop=10 VDC			
Temperature	<u>-1.5</u> °C		Table IIIB
Input Voltage	VDC		$10.0 \pm 0.2 \text{ VDC}$
Input Current	<u>194</u> mA		Table IIIB
Input Power, P _{diss}	W DC		Pdiss max
Frequency, f _{Tmin}	55, 499053 GHz		Table IIIB
RF Output Power, P _{Tmin}	13.1dBm		12 to 17 dBm
Frequency and RF Output Power Variation		t Para 5.2.5.2	
Measurement at 9.5 VDC or at 9.5 V	-1.5 °C		Table IIIB
Temperature			9.5 VDC or Para 5.2.3.2
Input Voltage			Table IIIB
Input Current			Table IIIB
Frequency, f _{meas}	55.499050 GHz		
RF Output Power, P _{meas}	(3.]dBm		12 to 17 dBm
Measurement at 10.5 VDC or at 10.5			
Temperature	<u>-1.4</u> °C		Table IIIB
Input Voltage	10.50 VDC		10.5 VDC or Para 5.2.3.3
Input Current			Table IIIB
Frequency, f _{meas}	55.499056 GHz		Table IIIB
RF Output Power, P _{meas}	<u>(3.1</u> dBm		12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$	- f _{Tmin} :		
Δf_{V} at 9.5 VDC or at VDC			
Δf_V at 10.5 VDC or at <u>10.5</u> VDC	= +.0		
Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom})		119 MHz	
Calculate RF Output Power Variation, ΔP _V	= P _{mess} - P _{Tmin} :		
ΔP_{V} at 9.5 VDC or at 9.5 VDC		ØdB	
ΔP_V at 10.5 VDC or at 10.5 VDC	= 0	₫B	
	= <u>+.</u>	dB	
Acce			
Test Performed by	Date $\frac{q/y}{\sqrt{2}}$		
Litton Q.A.	Date SEP 2 5	551,	
CODE IDENT NO.	NUMBER	REV	SHEET 40 OF 68
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TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS

INITIAL DATA SE	ET FINAL DA	TA SET	<u>/</u>
LITTON TYPE LS E 9036 AK/A SERIAL NUMBER: 85076	QUAL TEST		1336610- <u> </u>
Temperature Testing at T=30°C, Ref. Test	Para. 5.2.5.3		
SPECIFICATION	MEASUREMENT AT	T=30° ±1°C	LIMIT
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{30°C} RF Output Power, P _{30°C}	29.6 °C 10.00 VDC 196 mA 1.96 W DC 55.501230 GHz 13.0 dBm		30° ± 1°C 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at	With Voltage, Ref. Test I	Para 5.2.5.3	Table IIIB 9.5 VDC or Para. 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or at 10.5 Temperature Input Voltage Input Current Frequency, f _{meas} RF Output Power, P _{meas}	VDC 29.5 °C 10.50 VDC 194 mA 55. 501218 GHz 13.0 dBm		Table IIIB 10.5 VDC or Para. 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ Δf_V at 9.5 VDC or at 9.5 VDC Δf_V at 10.5 VDC or at 9.5 VDC Δf_T at 10.0 VDC (= f_{Tmin} - f_{30} -c) Calculate RF Output Power Variation, ΔP_V ΔP_V at 9.5 VDC or at 9.5 VDC ΔP_V at 10.5 VDC or at 9.5 VDC ΔP_V at 10.5 VDC or at 9.5 VDC ΔP_V at 10.0 VDC (= P_{Tmin} - P_{30} -c)	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	MHz MHz MHz dB dB dB	
Test Performed by Litton Q.A.	Date SEP 2	<u>∕</u> Rejec <u>∕</u>	
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TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS

	ONAL PERFORMANCE TESTS T FINAL DATA SET	<u> </u>
LITTON TYPE LS E 9036 AK/A SERIAL NUMBER: 85076	1	SD 1336610- 8 CEPT TEST
Temperature Extreme Testing at Tmax, Ref.	. Test Para. 5.2.5.4	
SPECIFICATION	MEASUREMENT AT Tmax ±1°	<u>C LIMIT</u>
Measurement at Vop=10 VDC Temperature Input Voltage Input Current Input Power, P _{diss} Frequency, f _{Tmax} RF Output Power, P _{Tmax}		Table IIIB 10.0 ± 0.2 VDC Table IIIB Pdiss max Table IIIB 12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at		Table IIIB 9.5 VDC or Para 5.2.3.2 Table IIIB Table IIIB 12 to 17 dBm
Measurement at 10.5 VDC or at 10.5 V	VDC <u>44,8</u> °C <u>/0.50</u> VDC <u>/95</u> mA <u>55.5033</u> C GHz <u>/3.0</u> dBm	Table IIIB 10.5 VDC or Para 5.2.3.3 Table IIIB Table IIIB 12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ - Δf_V at 9.5 VDC or at		
Calculate RF Output Power Variation, $\Delta P_V = \Delta P_V$ at 9.5 VDC or at $\underline{9.5}$ VDC = ΔP_V at 10.5 VDC or at $\underline{10.5}$ VDC = ΔP_T at 10.0 VDC (= P_{meas} - P_{Tmax})	= <u>Ø</u> dB	
Test Performed by Litton Q.A.	Date 9/32/47 Date SEP 2 5 384	

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TEST DATA SHEET 7.23B

	FUNCTIONAL PE	RFORMANO	CE TESTS	1	
INI	TIAL DATA SET	_ FINAL D	AIA SEI	<u>v</u>	
	2 2 A 1 A			AESD 1336610-	٩
LITTON TYPE LS E	636 AR/A	CCT		ACCEPT TEST	
SERIAL NUMBER:	QUAL TI	251		ACCEPT TEST	
Frequency Pulling and Loa	ad VSWR 2.5:1 max. all pha	ses. Ref Tes	st Para. 5.9		
TEST DESCRIPTION			LIMIT	2 2	
Output Open and Short. R	ef. Test Para. 5.9.5				
	3. 9.1 ℃		24°C ±	= 5°C	
Temperature			Table 1		
Frequency:	55.500701 GHz		=	7 dBm	
RF Output Power:				.2 VDC	
Input Voltage .	10.00 VDC		Table 1		•
Input Current:	195 mA	. ·		mage or Degrada	tion
Results:	Acceptabl	.C	NO Da	mage of Degram	4011
Calculate maximum Frequence $\Delta f_{scc} = \Delta f_{S}$ (Use worst-ca	nency Accuracy (both positives Δf_s from 7.2, 7.7, and 7.2	/e and negati 2A) + Δf _H (fi	ve), rom 7.22A) + a	∆f _L (from 7.23A):	,
Maximum $\Delta f_{acc} =$	+.799 MHz (Po	ositive)	Table !		
IVIAXIIIIUIII ZMacc	030 MHz (N		Table	IIIB	
Calculate maximum Short $\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use w	t-term Frequency Stability (to orst-case Δf_V and Δf_T from f_V	ooth positive 7.2 thru 7.6):	and negative),		
Maximum $\Delta f_{V+T} =$	+, 594 MHz (P	ositive)	Table	IIIB	
Waxiiiuii 21V+7	+, 594 MHz (Pe	egative)	Table	IIIB	
$\Delta P_{OV} = \Delta P_{V} + \Delta P_{T} (Use)$	all RF Output Power Stabilit worst-case ΔP_V and ΔP_T from	n 7.2 thru 7.6	ive and negative ΔP_{H} (from 1.0 dB)	$(1.22A) + \Delta P_L(II)$	om 7.23A):
$Maximum \Delta P_{OV} =$	+ . 5 ½ dB (Post	ative)	-1.0 dl	В	
	Accept	Reject			
Test Performed by	DH (P)	Date	_ वाध्मावः	_	
Litton Q.A.		Date	SEP 2 5 199		
CODE IDENT NO	SIZE NUM	/BER	REV	SHEET 61 OF	68

CODE IDENT NO. 56348	SIZE	NUMBER 1300823	REV B2	SHEET 61 OF 68	
30340		THE PROPERTY OF COME	OT / CARTTA	CT ADA CA 95054	

Channels 9-14 LOs

PLO No. 1 (P/N: 1348360-1, S/N: F01)

TCXO No.1 (P/N: 1348325-1, S/N: 9702-48683)

PLO No. 2 (P/N: 1348360-1, S/N: F02)

TCXO No.2 (P/N: 1348325-1, S/N: 9702-48684)

Summary of Test Results for AMSU-A Phase Locked Oscillator Testing Serial Numbers F01 and F02

Both PLO F01 and PLO F02 meet all requirements as defined in AE-26633, the PLO product specification. The following table summarizes how each unit meets and exceeds each requirement.

Paragraph	Description	Requirements	F01	F02
3.2.1.1	Input Voltage and	600 mA max,	531 mA for +15V	497 mA for +15V
	Current	+15V	64 mA for -15V	64 mA for -15V
		100 mA max, -		
		15V		
3.2.1.2	Operating	+1°C to +44°C	-16°C to +60°C***	-11°C to +52°C***
	Temperature			
3.2.1.3	Start-up	All loads, -30°C	-30°C and +60°C in	-30°C and +60°C in
		and + 60 °C; in	vacuum	vacuum
		vacuum		
3.2.1.4 &	Frequency Stability			
3.2.1.5	from 57.290344	± 200 kHz	+ 40 kHz, -15 kHz	+0 kHz, -22 kHz
	GHz at 22 °C			
3.2.1.6	RF Output Power	17 to 20 dBm	18.87 dBm	19.84 dBm
3.2.1.7	Output Power			
	Stability	< 1.5 dB	-0.9 dB, +0.35 dB	-0.69 dB, +0.16 dB
3.2.1.8	Load VSWR	2.01:1 or less	Verified	Verified
3.2.1.9	AM Noise	<-130 dBc/Hz @	-135 dBc/Hz @ 1 MHz	-136 dBc/Hz @ 1 MHz
		1 MHz	-140 dBc/Hz @ >8	-143 dBc/Hz @ > 8
	<u> </u>		MHz*	MHz*
3.2.1.10	FM Noise	<-100 dBc/Hz @	-102 dBc/Hz @ 1 MHz	-102 dBc/Hz @ 1 MHz
		1 MHz	-128 dBc/Hz @ > 8	-127 dBc/Hz @ > 8
			MHz*	MHz*
3.2.1.11	Spurious and Sub	<-90 dBc (No		
	Harmonic Signals	Spur in 110 MHz	Better than -92 dBc**	Better than -91 dBc**
		to 400 MHz)		
3.2.1.12	Harmonics	< 30 dBc	Below -66 dBc	Below -61 dBc
3.2.1.14	Warm-up time	< 30 minutes	Verified	Verified
3.2.1.15	Grounding and	ĺ		
	Shielding		By Design	By Design
3.2.1.16	Input Voltage			
	Protection		By Design	By Design
3.2.1.17	Reverse Polarity			
	Protection		By Design	By Design
Environmen		AE-26633		
	Microphonics		TCXO Test	TCXO Test
	ation Hardness	AE-26633	By Analysis	By Analysis
	EMI/RFI	AE-26633	Verified	Not Required
	Vibration	AE-26633	Qualification Level	Acceptance Level
The	rmal Vacuum	AE-26633	Yes	Yes
Weight	tom Dogwind France	2.00 lbs	2.00 lbs	2.00 lbs.

^{*} AMSU-A System Required Frequency

^{**} Spectrum Analyzer Noise Floor = -92 dBm

^{***} PLO Lockable in this range

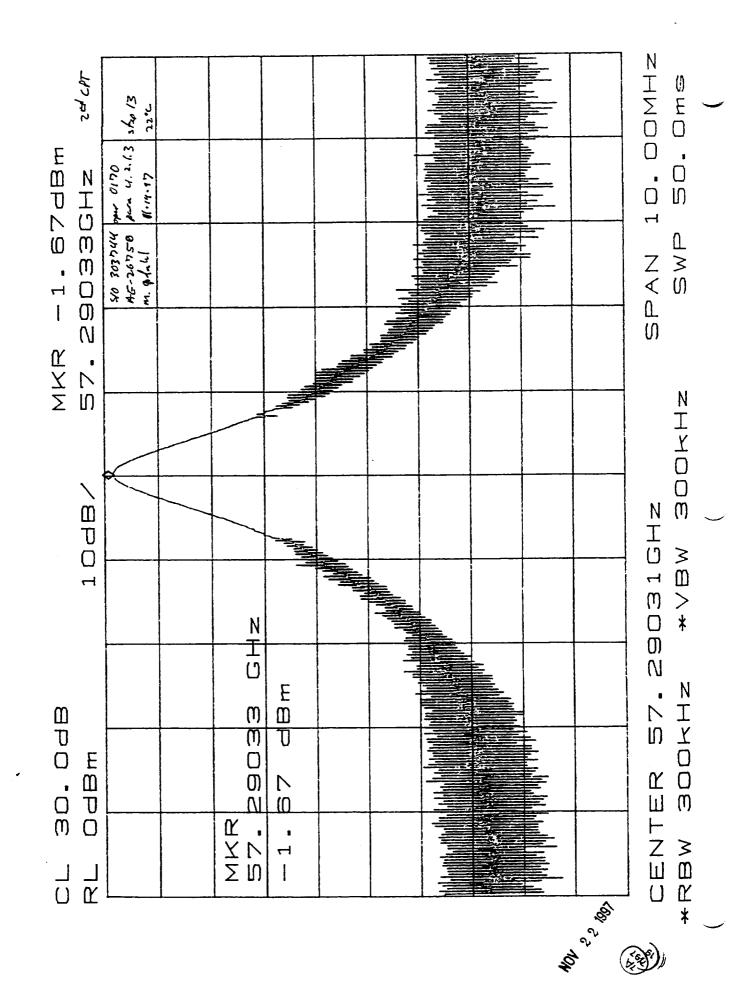
TEST DATA SHEET 6 (Sheet 1 of 7) Functional Testing (Paragraph 4.2.1)

Test Setup Verified: Signature

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Paragraph 4.2.1.3, Functional Testing:	Paragraph	4.2.1.3.	Functional	Testing:
--	-----------	----------	-------------------	----------

Step	Test	Expected	Measured	Pass/Fai
18	Current Time		Time	1
4	Evacuate vacuum chamber and record pressure	<10 ⁻² torr	Pressure = 2.5×10^{-3} torr	Pacs
5	Thermal couple readings	TC1 = 22 ± 2 °C	TC1 = 22.5 °C	Pass
		TC2 = 22 ± 4 °C6	TC2 = 25./ °C	N/A
		TC3 = 22 ± 6 °C 6	TC3 = 27.4 °C	AIA
6	Record Time and Calculate clapsed Times	→ 30 mins	Current Time O	
7	Power-On time		Time	
	DRO L/A	<1V	DRO L/A = V	Pass
	PLO L/A	<1 V	PLO L/A =/23_ V	Pars
;	Is PLO locked?	Yes	YesX	Pars
8	Warm Up Time		No	1
	Current Time		Time	T
		5 to 10 minutes	Δ Time	
	PLO Frequency	57.290344 GHz ± 100 kHz	FreqpLO = 57.290 GHz 3402	Pas S
	PLO Power	17 to 20 dBm	$P_{DRO} = \frac{79.97}{\text{dBm}}$	Pass
9	Input Voltage and Current			1 407
	VM1 Voltage	+15 ± 0.1 V	VM1 = 15.02 V	Pais
	VM2 Voltage	-15 ± 0.1 V	VM2 = -14.997 V	12,5
	IM1 Current	600m \$00 to 500 mA max	IM1 = 5/7 mA	Pass
	IM2 Current	100 mA80 to 120 mA max	$IM2 = \underline{-6/} mA$	P. 15
	-VM3-Voltages	+12±0.1 V 6	VM3 = Vo	1,,,
	VM4 Voltage	-12±0.1 V O	VM4=Vo	1
	DRO L/A Voltage	< 1V	DRO L/A = V	Par
	PLO L/A Voltage	< 1V	PLO L/A = V	Pass
13	RF Output Power and	17 to 20 dBm	P _{PLO} = <u>/9.97</u> dBm	Pos
	Frequency	57.290344 GHz ± 100 kHz	FreqpLO = 57.290 340 GHz 291	Pass
14	Frequency vs. Voltage	1C 224+2C	TCI=21.5°C	Pass
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = - 15.205 V	Pau
		-15.2 ± 0.05 V	-Voltage = -15 2c2 V	P.,
			FreqpLO = 57, 270 340 290 GHz	A UI
- 1			P _{PLO} = <u>/Q YD</u> dBm	NIA



PARA	TEST	SPECIFICATION	4.5 FINAL FUNCTIONAL TESTS +20°C		
5.1	Electronic Tuning Range	<u> </u>			
.	Resistance w/fo+375Hz	0Ω to 100kΩ	Ω		
	Resistance w/fo-375Hz	0Ω to 100 k Ω	3.7K O		
5.2	Frequency Settability				
	Frequency Setting	143.22586MHz±71.6Hz	143 225, 862 Hz		
	Resistor Value	0 to 100k Ω	<u>1.5k</u> Ω		
5.3	Output Frequency				
		fo±143.2Hz	143,225,865 Hz		
5.4	Input Current				
	•	≤ 70 mA	<u>38.29</u> mA		
5.5	RF Output Power		171		
	RF Output Power	+15dBm±1dB	<u>/4.79</u> _dBm		
5.6	Frequency and Output Power Stability				
5.6.2	Frequency and Output Power vs	S Voltage	1122-5 0.1		
step b	Frequency w/Vin=12.00Vdc	fo	143725, 864 Hz		
	Power w/Vin=12.00Vdc	+15dBm±1dB (Po)	<u>//. 7 // dBm</u>		
	Frequency w/Vin=12.12Vdc	fo ± 28.6Hz	143225, 868 Hz		
	Power w/Vin=12.12Vdc	Po ± 0.5dB	<u>//.35</u> dBm		
	Frequency w/Vin=11.88Vdc	fo ± 28.6Hz	143725859 Hz		
	Power w/Vin=11.88Vdc	Po ± 0.5dB	<u>//.5/</u> _dBm		
	Frequency Pulling		14222 601/		
•	Freq. w/Load VSWR = 1:1 @ 0°		143,725,864 Hz 143,725,864 Hz		
•	Freq. w/Load VSWR = 2:1 @ 0°				
step c	Freq. w/Load VSWR = 1:1 @ 180°		143225,866 Hz		
	Freq. w/Load VSWR = 1:1 @ 90°		143,225, 864 Hz		
	Freq. w/Load VSWR = 1:1 @ 45°		143,225,866 Hz		
	Max. ∆Freq. from step a to c	≤ 14.3Hz	Hz		
5.7	Harmonics and Spurious		.		
	Harmonics	≤ - 70dBc			
	Spurious and Subharmonics	≤ - 85dBc	dBc		

TESTED BY:	1.8	
DATE:	1/8/97	

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			4.5 FINAL FUNCTIONAL TESTS
PARA	TEST	SPECIFICATION	+20°C
5.8	Phase Noise @:	<u> </u>	
	100Hz	≤-80dBc	dBc
	1kHz	≤ -115dBc	- /39 dBc
	10kHz	≤ -120dBc	- 144 dBc
	100kHz	≤ -125dBc	<u>-/43</u> dBc
	1MHz	≤ -130dBc	dBc
	Attach Plot		(\forall)
5.9	AM Noise @:		
	100Hz	≤-105dBc	dBc
	1kHz	≤ -125dBc	/39dBc
	10kHz	≤ -130dBc	- 150 dBc
	100kHz	≤ -135d Bc	dBc
	1MHz	≤ -140dBc	-158 dBc
	Attach Plot		(\forall)
5.10	Short Term Stability		
		±0.1ppm	<u>0.006</u> ppm
5.6.1	Frequency vs Temperature		
	Frequency ∆ from -30°C to -1°C	±2005Hz	<i>873.7</i> Hz
	Frequency ∆ from +42°C to +60°C	±2005Hz	<i>28</i> 6.5Hz
	Frequency ∆ from -1°C to +42°C	±143.2Hz	87.4 Hz
	Power ∆ from -1°C to +42°C	±1dB	<u>0.6</u> dB
	Power \triangle from -30°C to +60°C	+13dBm (min)	
5.6.3	Frequency and Power Hysteresis		
	Frequency Hysteresis @ +20°C	±0.3 ppm	ppm
	Power Hysteresis @ +20°C	±0.25dB	
	Attach Plot		(\forall)

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DATE: 1/9/97

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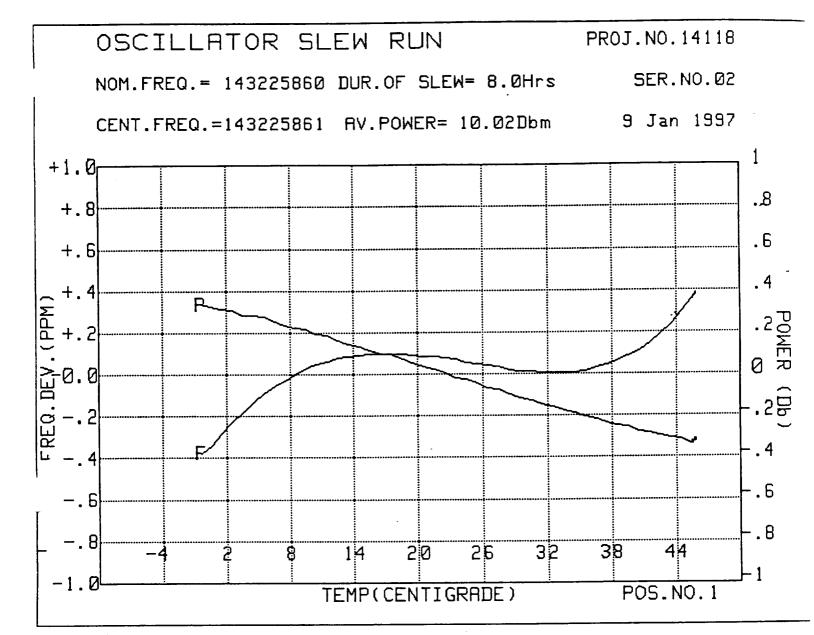
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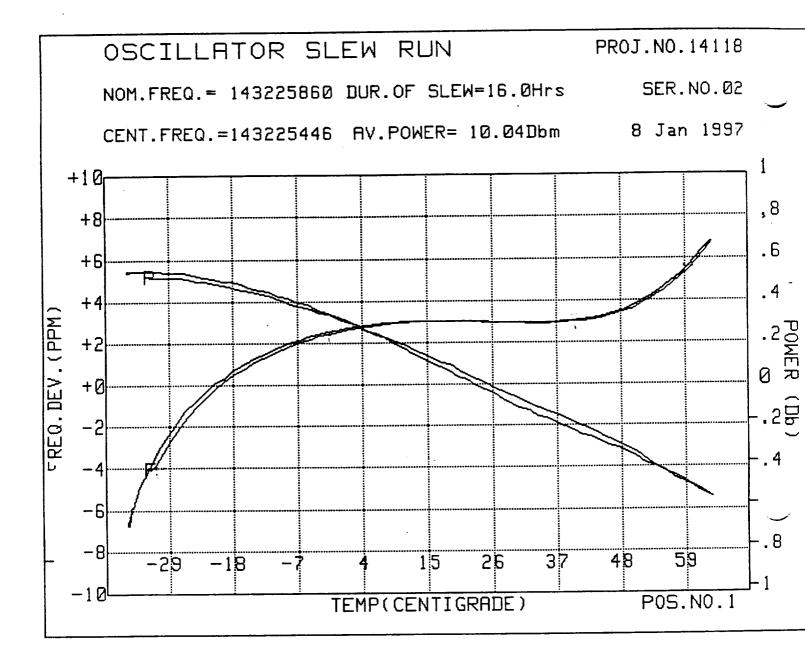
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SHEET 12



Final functional TEST PAR. 5.6.1 SIN 9702-48683



Final Functional TesT PAR. 5.6.3 SIN 9702-48683

TEST DATA SHEET 6 (Sheet 1 of 7) Functional Testing (Paragraph 4.2.1)

Test Setup Verified: Mark Polar Signature

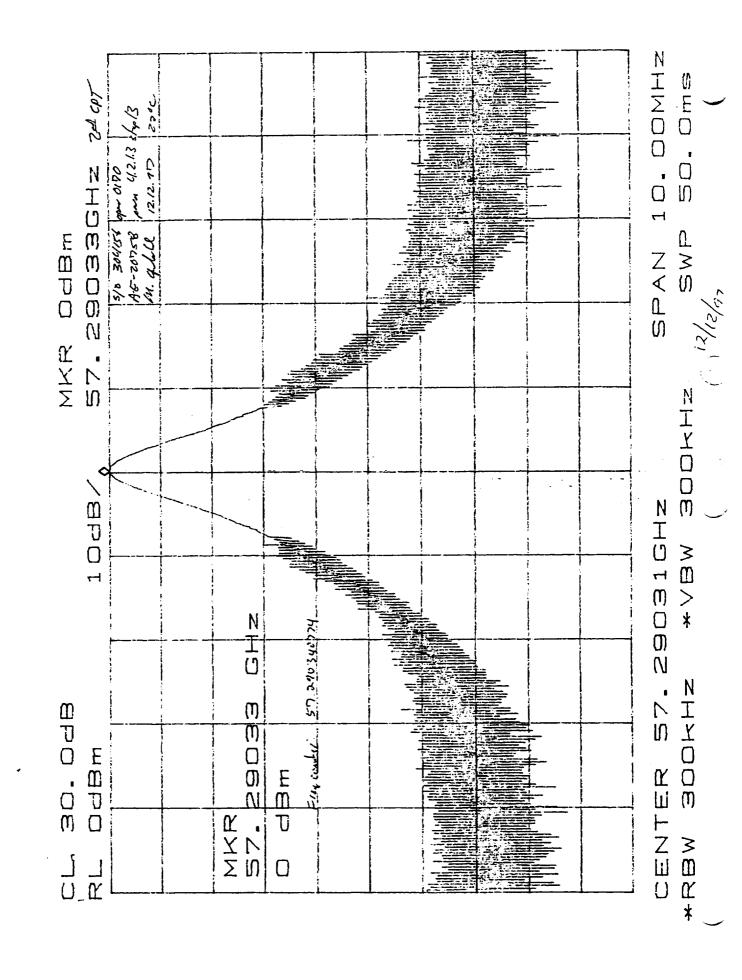
Paragraph 4.2.1.3, Functional Testing:

Step	ph 4.2.1.3, Functional Testing: Test	Expected	Measured	Pass/Fa
-18	Current Time		Time	
4	Evacuate vacuum chamber and record pressure	<10 ⁻² torr	Pressure = torr	
5	Thermal couple readings	TC1 = 22 ± 2 °C	TC1 = 30 9 °C	Pasi
		TC2 - 22 ± 4 °Cs	TC2 = <u>20.9</u> °C	37.01
		- TC3 = 22 ± 6 °C 6	TC3 = 25. °C	90' - 2
6	Record Time and Calculate elapsed Times	→ 30 min	Current Time O	
7	Power-On time		Time	<u> </u>
	DRO L/A	<1V	DRO L/A = 01/4 V	Pay
	PLO L/A	<1 V	PLO L/A = - i i V	Pick
	Is PLO locked?	Yes	Yes X	
			No	· Pags
8	Warm Up Time	·		
	Current Times		Time	
		5 to 10 minutes	A Time	
	PLO Frequency	57.290344 GHz ± 100 kHz	Freque = 57 19034 GHZ	Pers
	PLO Power	17 to 20 dBm	$P_{DRO} = 19.84 \text{ dBm}$	Fass
9	Input Voltage and Current			
	VM1 Voltage	+15 ± 0.1 V	VM1 = 15.62 V	2
	VM2 Voltage	-15 ± 0.1 V	VM2 = /5,0 \ V	Ris
	IM1 Current	600mf30 to 500 mA max	IM1 = 4c1 mA	f ¹ 7 5 5
	IM2 Current	100 mA80 to 120 mA max		Pass
	-VM3 Voltage	+12±0.1 76	VM3=Vo`	
	-VM4-Voltage	-12±0.1 V o	VM4=VO	
	DRO L/A Voltage	< 1V	DRO L/A = V	Pass
	PLO L/A Voltage	< 1V	PLO L/A = V	Pass
13	RF Output Power and	17 to 20 dBm	P _{PLO} = 17.84 dBm	Pass
	Frequency	57.290344 GHz ± 100 kHz	Freque = 57 24 5 GHZ 4	Pass
14	Frequency vs. Voltage	1C > 22+2C	TCIE	Pw>
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = $\underline{ris.20}$ V	Pars
		-15.2 ± 0.05 V	-Voltage =15.22_V	Pass
			FreqpLo = 57.290 3007451 GHz	P-15
- 1	i			71

bose boy

PPLO =

17.55 dBm



			4.5 FINAL FUNCTIONAL TESTS		
PARA		SPECIFICATION	<u>+20°C</u>		
5.1	Electronic Tuning Range				
	Resistance w/fo+375Hz	0Ω to 100 k $Ω$			
	Resistance w/fo-375Hz	0Ω to 100 k Ω	3.9K D		
5.2	Frequency Settability		1.100.00		
	Frequency Setting	143.22586MHz±71.6Hz 0 to 100kΩ	193225,899 Hz		
	Resistor Value	0 to 100kΩ	$\frac{1.8k}{\Omega}$		
5.3	Output Frequency				
		fo±143.2Hz	143 525 852 Hz		
5.4	Input Current		- 0 -		
	•	≤ 70 mA	38.1ZmA		
5.5	RF Output Power				
	RF Output Power	+15dBm±1dB			
5.6	Frequency and Output Power Stability				
	Frequency and Output Power vs	S Voltage			
step b	Frequency w/Vin=12.00Vdc	fo	143,225,852 Hz		
	Power w/Vin=12.00Vdc	+15dBm±1dB (Po)	<u>/5.27</u> dBm		
	Frequency w/Vin=12.12Vdc	fo ± 28.6Hz	143,225,853 Hz		
	Power w/Vin=12.12Vdc	Po ± 0.5dB	/ <i>S</i> .38dBm		
	Frequency w/Vin=11.88Vdc	fo ± 28.6Hz	143225 850 Hz		
	Power w/Vin=11.88Vdc	$Po \pm 0.5dB$			
5.6.4	Frequency Pulling				
	Freq. w/Load VSWR = 1:1 @ 0°		143225,550 Hz		
•	Freq. w/Load VSWR = 2:1 @ 0°		143 225, 848 Hz		
step c	Freq. w/Load VSWR = 1:1 @ 180°		143,225, 85° Hz		
	Freq. w/Load VSWR = 1:1 @ 90°		143225 850 Hz		
	Freq. w/Load VSWR = 1:1 @ 45°		143.225, 849 Hz		
	Max. ΔFreq. from step a to c	≤ 14.3Hz	2.0 Hz		
5.7	Harmonics and Spurious				
	Harmonics	≤ -70dBc	<-70dBc		
	Spurious and Subharmonics	≤ -85dBc	dBc		

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SHEET 11

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			4.5 FINAL
			FUNCTIONAL TESTS
PARA		SPECIFICATION	<u>+20°C</u>
5.8	Phase Noise @:		4.2
	100Hz	≤ -80dBc	<u>//0</u> dBc
	1kHz	≤-115dBc	$\frac{-138}{}$ dBc
	10kHz	≤ -120dBc	dBc
	100kHz	≤ -125dBc	-143 dBc
	1MHz	≤ -130dBc	<i></i> dBc
	Attach Plot		(\f)
5.9	AM Noise @:		
	100Hz	≤ -105dBc	dBc
	1kHz	≤ -125dBc	dBc
	10kHz	≤ -130dBc	/5 ^O dBc
	100kHz	≤ -135dBc	dBc
	1MHz	≤ -140dBc	dBc
	Attach Plot		(\forall)
5.10	Short Term Stability		
		±0.1ppm	
5.6.1	Frequency vs Temperature		
	Frequency Δ from -30°C to -1°C	±2005Hz	Hz
	Frequency Δ from +42°C to +60°C	±2005Hz	286.5 Hz
	Frequency Δ from -1°C to +42°C	±143.2Hz	57.3 Hz
	Power \triangle from -1°C to +42°C	±1dB	O.5 dB
	Power ∆ from -30°C to +60°C	+13dBm (min)	
5.6.3	Frequency and Power Hysteresis		
	Frequency Hysteresis @ +20°C	±0.3 ppm	O.Oppm
	Power Hysteresis @ +20°C	±0.25dB	dB
	Attach Plot		(N)

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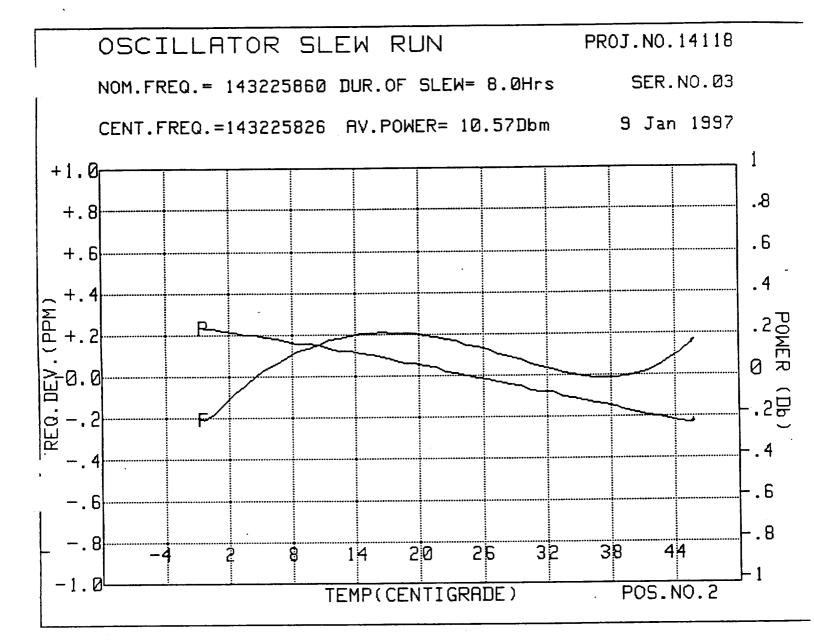
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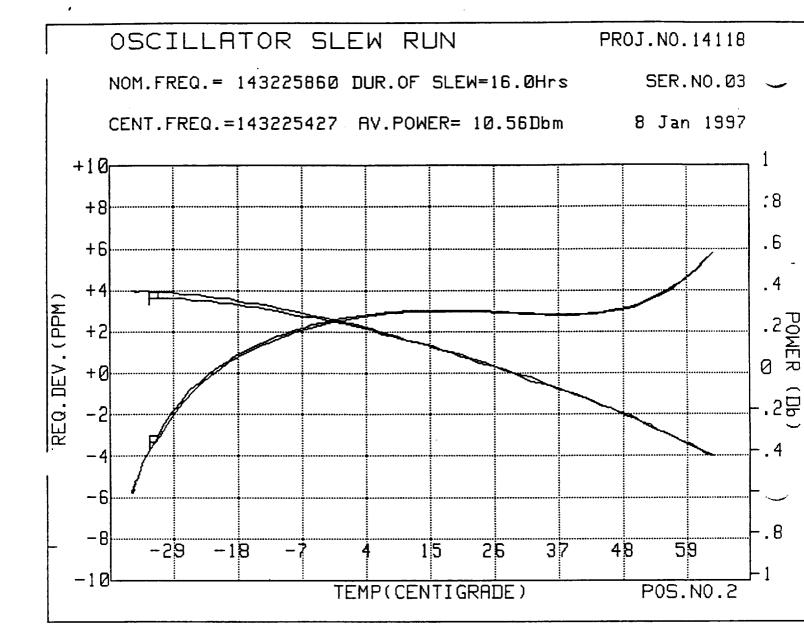
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SHEET 12



Final functional Test PAN. 56.1 SW 9702-48684



Final Functional Test PAN: 5.6.3 SIN 9702-486PY

Channel 15 LO

GDO (P/N: 1336610-10, S/N: FM2)

AMSU-A GDO Data Sheet 1

Sequence Description:	Date: <u>4//4/47</u>
Millitech Part Number 9050160001; Serial Number FM	Operator: OSX QC Verify Set-up:
Aeroiet Part Number 1336610-10	CC verily ser-up.

Output Power direct: 15.98 dBm; Output Power in test set-up: 13.47 dBm Output Power Delta: 2.51 dB A.

Unit Temperature: 205 °C; Vacuum level: 20 mTorr

Baseline Measurements

V/h (volen)	15.0	14.25	15.75	min limit	max limit	Pass/Fall
Vb (volts)	+15.00	+111.25	15.75	05	+.05	1655
Vb meas. (Volts)		124	179		230	1450
lb (mA)	179	 	85.987			
fo (GHz)	38.987	58.787	+13.47			
Po (dBm, meas)	+13.47	1/3.47		13	17	Pass
Po (dBm, corr)	+15.98	115.48	+15.98			

Frequency Pulling, Vb = 15.0 volts; measured /5/ccV

D.	riequency .	188.987			min·limit	max limit	Pass/Fail
	(GHz)		+Δ (MHz)	+/,3142		+ 5 MHz	F6.57
Fmax	c (GHz)	88,988			-5 MHz	_	N2:55
Emin	(GHz)	88.987	- ∆ (MHz)	C 3162	-0 1411.12		

Power Pulling

E. POWE	1 4111119	0.10			min limit	max limit	Pass/Fail I
Pref (dBm)		-1.78	+∆ (dB)	. 0 . 13		+0.2dB	6455
Pmax (dBm)		-7,06		70.12	-0.2 dB		1355
Pmin (dBm)		-7.36	- ∆ (dB)	-0.18	-0.2 06	<u> </u>	1

Turn-on current

P. Turrent derroit	15.0	min limit	max limit	Pass/Fail
Vb (volts)		11111111111		64:55
Measured Vb	115.0€			
Turn-on current (mA)	179		345	Fc: 53
time to peak (ms)	10.8			
time to settle (ms)	10.8	F	7.0	•

Unit Temperature: 21 °C Vacuum level: 20 mTorr G.

DATA SHEET ACCEPT/REJECT

DATA SHEET ACCEPIA	REJECT	
Accept (NA)	Reject	
	Test Failure Report No.	
	Report Date	

SIZE	CAGE CODE 8V456	DWG. NO. TP501600-2			
SCALE	REV.	LTR. A00	SHEET 29 C		

AMSU-A GDO Data Sheet 1

Millited	nce Description: -2° 0 th Part Number 905016 the Part Number 1336610	30001; Serial Number _	FM 2 Operator	<u>リルリタフー</u> : <u>レダメ</u> y Set-up:	4/22-197 MTC MTC
Α.	Output Power direct:	<i>15.98</i> dBm; Output P	ower in test set-u	p: <u>13,47</u>	dBm

Output Power Delta: 2,51 dB

Unit Temperature: _2 °C; Vacuum level: _/5 _mTorr В.

C. Baseline Measurements

Vb (volts)	15.0	14.25	15.75	min limit	max limit	Pass/Fail
Vb meas. (Volts)	+15 00	+14,25	+15.75	05	+.05	Pugg
Ib (mA)	173	173	173	-	230	8045
fo (GHz)	58,992	88,992	58,992			
Po (dBm, meas)	+13,34	+13.34	+13.34		***	
Po (dBm, corr)	+ 15.85	+15.85	+15.85	13	17	1455

Frequency Pulling, Vb = 15.0 volts; measured 15.00 V

D. Hequency			77,00			
Fref (GHz)	58,992			min limit	max limit	Pass/Fail
Fmax (GHz)	१७, १९१	+Δ (MHz)	+2	-	+ 5 MHz	0,42
Fmin (GHz)	88,489	- Δ (MHz)	- 3	-5 MHz		Pa. 45

E. Power Pulling

Pref (dBm)	-6,48			min limit	max limit	Pass/Fail
Pmax (dBm)	-4.32	+Δ (dB)	40.14		+0.2dB	Pasx
Pmin (dBm)	-6.65	- Δ (dB)	-0.17	-0.2 dB		Fa55

F. Turn-on current

Vb (volts)	15.0	min limit	max limit	Pass/Fail
Measured Vb	+15.00			Pago
Turn-on current (mA)	173		345	Paga
time to peak (ms)	11,0		* **	71.0
time to settle (ms)	/1,0		***	

G. Unit Temperature: 2°C Vacuum level: 15 mTorr

DATA SHEFT ACCEPT/REJECT

Accept	(ITC)	Reject	
	(MA)	Test Failure Report N	o
	9	Report Da	te

	SIZE	8V456		DWG. NO. TP501600-2	2
ľ	SCALE		REV.	LTR. AOO	SHEET 29 OF 41

AMSU-A GDO Data Sheet 1

Sequence Description: Millitech Part Number 9 Aerojet Part Number 13	443°C Comp Fost 9050160001; Serial Number FM: 336610-10	Date: <u>i.(I.() 02 - (19 </u> 97 - 4/20/97) 2 Operator: <u>O57</u> QC Verify Set-up: ATC AGA AGA AGA AGA AGA AGA AGA
		in fact act up: 12.47 dBm

Output Power direct: 15.99 dBm; Output Power in test set-up: 13.47 dBm Output Power Delta: 2.51 dB A.

Unit Temperature: 445 °C; Vacuum level: 18 mTorr В.

C. Baseline Measurements

Vb (volts)	15.0	14.25	15.75	min limit	max limit	Pass/Fail
Vb meas. (Volts)	+15:00	+14-25	+15,75	05	+.05	P4 45
Ib (mA)	185	185	185		230	P455
fo (GHz)	88.980	84,940	88,980	-		
Po (dBm, meas)	+ 13.36	+/3.36	+/3.34			
Po (dBm, corr)	+15.87	+15,87	+15.87	13	17	f495

Frequency Pulling, Vb = 15.0 volts; measured /5.00 V

D: 1700001107 1	3,		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		D/F-:1
Fref (GHz)	88,980		min limit	max limit	Pass/Fail
Fmax (GHz)	88,983	+Δ (MHz) + 3	-	+ 5 MHz	Pogs
Fmin (GHz)	88977	- Δ (MHz) - 3	-5 MHz	_	Poss
i Emin (Gnz)	1 037//				

Power Pulling

1	Pref (dBm)	-6153	5.45 ×		min limit	max limit	Pass/Fail	
-	Pmax (dBm)	-6,35	+Δ (dB)	10.18		+0.2dB	Ragi	
•	Pmin (dBm)	-6:70	- Δ (dB)	-0.17	-0.2 dB		Puss	

F. Turn-on current

Vb (volts)	15.0	min limit	max limit	Pass/Fail
Measured Vb	+15.00			60.77
Turn-on current (mA)	185		345	6000
time to peak (ms)	10.6			
time to settle (ms)	10,6			

Unit Temperature: $\frac{\pm 43}{2}$ °C Vacuum level: $\frac{18}{2}$ mTorr G.

DATA SHEET ACCEPT/REJECT

Accept	(MIG)	Reject	
<u> </u>		Test Failure Report No.	
		Report Date	

SIZE	CAGE CODE 8V456	DWG. NO. TP5016	500-2
SCALE	REV	LTR.	SHEE 29 0

AMSU-A GDO Data Calculation Sheet 8

Sequence Description: Frequency Accuracy & Stability Calculations

Millitech Part Number 9050160001; Serial Number FM2 Operator: 0754

Aerojet Part Number 1336610-10

A. Frequency Accuracy from Thermal Vacuum, CPT and Final LPT Data

	Parameter, Vb = 15.0 volts	Data Sheet, Section	Date, mm/dd/yy	Measurement
1	+Δ, pulling, +20.5°C, MHz	1, D	4/14/97	+1
2	- Δ, pulling, + 20.5°C, MHz	1, D	4/16/97	0
3	+Δ,pulling, +43°C	1, D	4/19/97	+3
4	-Δ, pulling, +43°C	1, D	4/19/97	-3
5	+Δ, pulling, -2°C	1, D	41/21/97	+ 2
6	-Δ, pulling; -2°C	1, D	4/21/97	_ 3
7	Set point w / max Hysteresis, GHz	6, E	4/11/97	88,954
8	Set point w / min Hysteresis, GHz	6, E	4/11/97	44.981
9	(Maximum of lines 1, 3, and 5) +7	l		88,987 GHz
10	(Maximum of lines 2, 4, and 6) +8			88.418 GHZ

B. Frequency Accuracy Result

	Result	min limit	max limit	Pass/Fail
A9, GHz	85,987		89.030	Paga
A10, GHz	88,978	88.970		P227

CONTINUED, GO TO NEXT PAGE

SIZE	CAGE CODE 8V456	DWG. NO. TP5016	
SCALE	REV	. LTR. AOO	36 OF 41

AMSU-A GDO Data Calculation Sheet 8, continued

Sequence Description: Frequency Accuracy & Stability Calculations

Millitech Part Number 9050160001; Serial Number FM2 Operator: CSY

Aerojet Part Number 1336610-10

C. Frequency Stability from Comprehensive Performance Test Data

	Bias Voltage, volts	Data Sheet, Section	Date, mm/dd/yy	Tcase, °C	Measurement, GHz
1	14.25	1, C	4/16/97	+ 20.5	88,987
2	15.0	1, C	4/16/97	+20.5	88,987
3	15.75	1, C	4/16/97	+20.5	88,987
4	14.25	1, C	4/21/97	-2	58.992
5	15.0	1, C	4/2/197	-2	68.992
6	15.75	1, C	4/21/97	-2	88.992
7	14.25	1, C	4/19/97	+43	F8.980
8	15.0	1, C	4/19/97	+43	58.980
9	15.75	1, C	4/19/97	+43	48,99C
10	((Maximum of 1 th	rough 9) -C2)	* 1000 MHz		+5 MHz
11	((Minimum of 1 thr	ough 9) -C2)	* 1000 MH	Z	-7 MHz

D. Frequency Stability Result

	Result	min limit	max limit	Pass/Fail
C10, MHz	+5		+50	A4.55
C11, MHz	- 7	-50	<u>-</u>	Pu45

DATA SHEFT ACCEPT/REJECT

DATA SHEET	ACCEP1/	VERECI	
Accept	(3E)	Reject	
	(PA)	Test Failure Report	t No.
	9	Report	Date

SIZE	CAGE COD 8V456	- -	wg. NO. TP5016	500-2	
SCALE		REV. LT	A00		SHEET 37 OF 41

FREQUENCY STABILITY OF SAW FILTERS

Channel No.	=	12	13	14
Specification (+/-MHz)	6.0	6:0	0.2	0.2
Short-Term Measured (MHz)	+0.55, -0.63	+0.23, -0.19	+0.01, -0.09	+0.07, -0.00
Long-Term By Analysis (+/-MHz)	+0.02	+0.02	+0.02	+0.02
Total	+0.57, -0.63	+0.25, -0.09	+0.03, -0.09	+0.09, -0.00

Note: Additional +/-0.1 MHz frequency stability reserved for safety margin for channels 11-14.

		<u> </u>
		<u> </u>
		<u> </u>

FOR IF FILTERS AND SAW FILTERS

				_

3 dB BANDWIDTH OF IF FILTERS

Channel No. 1 2 Specification (MHz) 135 90	3 4	_						
135		5	9	7	∞	6	10	15
	90 200	170	200	200	165	165	78	0009
3 dB bandwidth (MHz) * 127 82	82 192	170	192	192	157	157	78	1020
f _L - f _H (MHz) 8-135 8-90 8	8-90 8-200	30-200	8-200	8-200	8-165	8-165	178-256	490-1510
Measured (MHz) 125.48 80.06 80.2 3 dB bandwidth (MHz) 125.48 80.06 80.2 f _L - f _H (MHz) 8.64- 9.00- 9.16- 134.12 89.06 89	80.24 189.74 116- 9.21- 89.40 198.95	167.76 31.25- 199.01	190.21 9.21- 199.42	190.24 9.22- 199.46	154.84 9.12- 163.96	154.84 154.90 9.12- 9.05- 163.96 163.95	76.49 178.92- 255.41	998.03 490.54- 1488.57

* Actual specifications for IF filters.

3 dB BANDWIDTH FOR SAW FILTERS

Channel No.	=	12	13	14
Specification				
3 dB Bandwidth (MHz)	72	32	16	9
f _{L1} - f _{H1} (MHz)	256.2-292.2	292.2-308.2	308.2-316.2	316.2-319.2
f _{L2} - f _{H2} (MH2)	352.2-388.2	336.2-352.2	328.2-336.2	325.2-328.2
Measured				
3 dB Bandwidth (MHz)	88.69	30.89	15.71	5.87
f _{L1} - f _{H1} (MHz)	256.71-291.51	292.62-308.04	308.29-316.12	316.26-319.18
f _{L2} - f _{H2} (MHz)	352.61-387.69	336.47-351.94	328.19-336.07	325.29-328.24

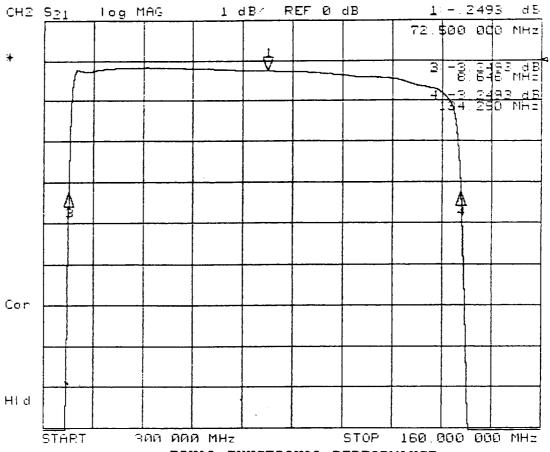
Channel 1 Bandpass Filter

IF Filter (S/N: 1331559-6, S/N: P232-003)

ACCEPTANCE TEST REPORT APPENDIX F BANDPASS FILTER MODEL HL72.5-125-10SS1 S/N_P232-003 AEROJET 1331559-6 REV. 3.0 dB PANDWIDTH ACCEPTANCE TEST PROCEDURE +40°C -10°C +15°C 63-0005-02 PARA 4.5.3 133.96 MHz 134.29 MHz 134,12 Mhz {7} UPPER 3.0 dB BANDEDGE (133.0-135.0) (133.0-135.0) (133.0-135.0) 8.65 MHz 8.62 MHz 8.64 Mhz (8) LOWER 3.0 dB BANDEDGE (8.0-10.0)(8.0-10.0)(8.0-10.0)125.64 MHz 125.48 Mhz 125.34MHz (9) 3.0 dB RELATIVE BANDWIDTH (123.0-127.0) (123.0-127.0) (123.0-127.0) 71.47 MHz 71.38 MHz 71.29 Mhz $\{10\}$ ADD $\{7\}$ AND $\{8\} \div 2 =$ (72.5 NOM) (72.5 NOM) (72.5 NOM) +42.8 °C +<u>15,5</u>℃ {10a} RECORD MEASURED TEMPERATURE - 12.7 °C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) (√) $\sqrt{(1)}$ $\checkmark(\lor)$ (6) ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT PASSBAND RIPPLE +40°C ACCEPTANCE TEST PROCEDURE -10°C +15°C 63-0005-02 PARA 4.5.4 32.64 Mhz 32.24 MHz 33.44 MHz {11a} MIN INSERTION LOSS FREQ MIN INSERTION LOSS PERFORMANCE - O.I G dB -0.16 dB -0.17 dB 10.18 Mhz 10.14 MHz 10.22 MHz {11b} 75% BW LOWER BANDEDGE FREQ -0.45 dB 75% BW LOWER BANDEDGE I.L. PERF - 0.41 dB -0.43 dB 103.93Mhz 103.89 MHz 103.97 MHz {11c} 75% BW UPPER BANDEDGE FREQ -0.43 dB -0.46 dB 75% BW UPPER BANDEDGE I.L. PERF - O.41 dB 0.29 dB <u>().25</u> dB $0.27 \, dB$ {11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a}) 0.25 dB 0.29 dB 0.27 dB {11e} PERFORMANCE DELTA

Prepared in accordance with MIL-STD-100								
CONTRACT NO		CAGE CODE	DWG. NO.	REV.				
	Α	57032	63-0005-02	J				
DADEN-ANTHONY ASSOCIATES INC.	FILE. AC	AD:63/0502APFJ.DOC	SHEET	12				

(I.L. @ {11c} - I.L. @ {11a})

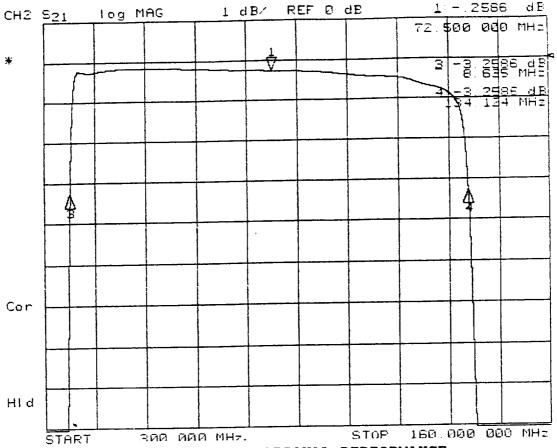


FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P232-003 -10C DATA

MARKER PARAMETURE

OPR: R. HOGGATT DATE 11/25/40

MARKER 1	16.350000 MHz OFF	72.500000 MHz ~.2493 dB
MARKER 2	128.750000 MH± OFF	71.468471 MHz OFF
MARKER 3	25.625000 MH≥ OFF	8.646337 MHz -3.2493 dB
MARKER 4	119.375000 MH± OFF	134.290606 MH± -3.2493 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT NARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -14 dB -3 dB ØFF	OFF CONTINUOUS OFF -3 dB -3 dB 9FF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P232-003 +15C DATA

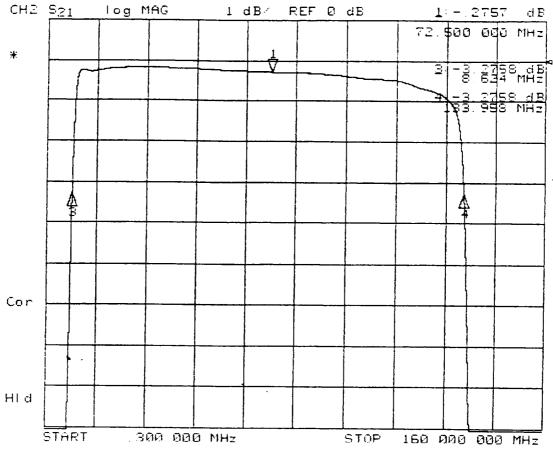
OPR: R. HOGGATT DATE 11/25/94

Chunnel 2 Chumnet 4 MARKER PARAMETERS 16.250000 MHz -72.500000 MH= MARKER 1 - 2588 dB OFF 71.379748 MHz 128 750000 MHz MARKER 2 OFF OFF 25.625000 MHz OFF 8.635391 MHz MARKER 3 -3,2586 dB 134.124106 MHz 119.375000 MHz MARKER 4 -3,2586 dB OFF 89.425802 MH= 0,000000 MHz MKR STIMULUS OFFSET -3,2342 dB 0 dBOFF OFF REFERENCE MARKER CONTINUOUS CONTINUOUS PLACEMENT OFF MARKER SEARCH TARGET VALUE OFF -14 dB -3 dB -3 dB -3 dB MARKÉR WIDTH VALUE OFF

ÓFF

OFF

MARKER TRACKING



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P232-003

+40C DATA

MARKER PARAMETERS OPR: R. HOGGATT DATE 11 75 40

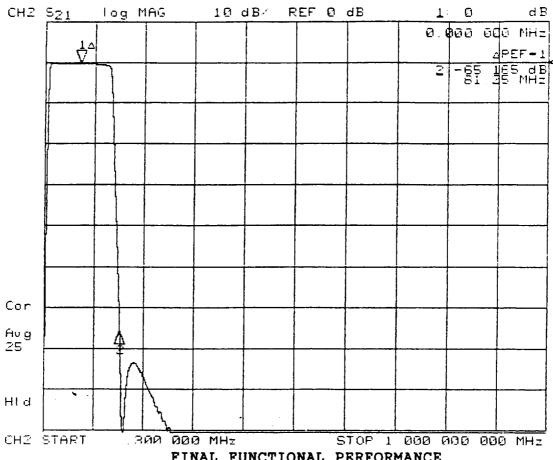
MARKER 1	16.250000 MHz OFF	72.500000 MHz 2757 dB
MARKER 2	128.750000 MHz OFF	71.291275 MHz OFF
MARKER 3	35.625000 MH≥ OFF	8.624010 MHz -3.2758 dB
MARKER 4	119 375000 MHz OFF	133.958541 MHz -3.2758 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT NARKER SEARCH TARGET VALUE MMRKER WIBTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF
MARKER TRACKING	OFF	OFF

APPENDIX F **ACCEPTANCE TEST REPORT** BANDPASS FILTER MODEL HL72.5-125-10SS1 S/N P232-CO3 AEROJET 1331559-6 REV. PASSBAND RIPPLE (CON'T) {11f} RECORD PASS/FAIL (0.5 dB MAX) PASSFAIL (PASS)FAIL V (1) (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** ACCEPTANCE TEST PROCEDURE -10°C +15°C +40°C 63-0005-02 PARA 4.5.5 Fc=72.5 MHz. REF (5A) FOR INSERTION LOSS @ Fc >100 dB {12} WORST CASE REJECTION FROM >100 dB >100 dB (40.0 dB MIN) 0.300 MHz TO 1.0 MHz (40.0 dB MIN) (40.0 dB MIN) {13a} WORST CASE REJECTION FROM -65.2 dB -66.0 dB -66.9 dB 153.75 MHz TO 1000.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13c} RECORD MEASURED TEMPERATURE -13.0 ℃ +47.8°C +15.3 °C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) **{14} ATTACH REJECTION PERFORMANCE** X-Y PLOT(S) TEST PERFORMED BY 12. HOGGAIL DATE 11/25/96 NOTE IF TEST WITNESSED BY AESD: ____ GSI: ____ DOTWITUESSED THIS TIME ****** END OF FUNCTIONAL PERFORMANCE TEST **** **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION** {16} REFERENCE CUSTOMER DRAWING 1331559 **DESCRIPTION OF** DIMENSION AND ACTUAL MEASUREMENT TOLERANCE MEASUREMENT OVER ALL LENGTH 3.500 $3.50 \pm .03$ MOUNTING HOLE CENTER $0.125 \pm .010$.124 BETWEEN UPPER MOUNTING HOLES 3 248 3.250 BETWEEN LOWER MOUNTING HOLES 3.250 3,249 Prepared in accordance with MIL-STD-100 CONTRACT NO SIZE CAGE CODE DWG. NO. REV. 57032 63-0005-02 J DADEN-ANTHONY ASSOCIATES INC.

FILE: ACAD/63/0502APFJ.DOC

SHEET

13



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P232-003

-10C DATA OPR: R. HOGGATT DATE 11 75 9L

MARKER	PARAMETERS	OPR: R.	CHAIN		DAT	ह ।।।।	<u>TC</u> Ciranni	el 2	
MARKER	1		OFF 1		1999	МН≃	72 0 dB	. 500000	MH≥
MARKER	2		OFF	. 000	1999	MHz	153 -65.11	.750000 65 dB	MHz
MARKER	3		OFF	. 000	1000	MHz	153 OFF	750000	MHz
MARKER	4		OFF	. 000	000	MHz	1000 OFF	. 000000	MHz
MKR STI	MULUS OFFSE	Т	0 qE		999	MHz	ຍ ຍ dB	. 000000	MHz
REFEREN PLACEME MARKER TARGET	SEARCH		OFF CONTI OFF -3 dE		S		MARKER CONTIN OFF +3 dB	_	

-3 dB ÛFF

OFF

MARKER WIDTH VALUE

MARKER TRACKING

+3 dB -3 dB

OFF

CH2 S ₂₁ log MAG	10 dB/	REF 0 d	B	1: (0	d B	
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FI RE SE +1	NAL FUNC' JECTION : RIAL NO. 5C DATA	TIONAL PIPERFORMAL P232-00	ERFORM NCE 3	ANCE			
FI RE SE +1	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAL P232-00	ERFORM NCE	ANCE			
FI RE SB +1 OP MARKER PARAMETERS	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN PERFORMAN P232-00 GGATT DA	ERFORM NCE 3 ATE <u>I\</u> Z	ANCE -5 94	annel		1 =
FI RE SE +1 OP	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN P232-00	ERFORM NCE 3 ATE <u>I\</u> Z	ANCE <u>- حاطل</u>	annel	2	1=
FI RE SB +1 OP MARKER PARAMETERS	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN P232-00: GGATT D. 1.0000	ERFORM NCE 3 ATE <u>ll</u> 2	ANCE <u>اج اعر</u> ی	annel 72.51 dB 153.71	2 30000 MH 50000 MH	
FI RE SB +1 OP MARKER PARAMETERS MARKER 1	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN P232-00: GGATT D. 1 00000FF S 00000	ERFORM NCE 3 ATE 11/2 00 MH=	<u>اح احد</u> - 3	annel 72.51 dB 153.79 5.958	2 90000 MH 50000 MH dB	12
FI RE SB +1 OP MARKER PARAMETERS MARKER 1	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN P232-00: D. C.	ERFORM NCE 3 ATE 11/2 00 MH=	<u>اح احد</u> - 3	annel 72.50 dB 153.70 3.958	2 30000 MH 50000 MH	12
FI RE SB +1 OP MARKER PARAMETERS MARKER 1	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	1 0000 1 0000 F 5 0000 F 5 0000	ERFORM NCE 3 ATE 11/2 00 MH=	S 946 - 65	annel 72.5 dB 153.7 5.958 153.7 F	2 90000 MH 50000 MH dB	tz tz
FI RE SB +1 OP MARKER PARAMETERS MARKER 1 MARKER 2 MARKER 3	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN P232-000 CONTROL PROPERTOR	ERFORM NCE 3 ATE 11/2 00 MH= 00 MH=	0 -65	annel 72.50 dB 153.79 5.958 153.7 F 000.0	2 30000 MH 50000 MH dB 50000 MH	tz tz
FI RE SB +1 OP MARKER PARAMETERS MARKER 1 MARKER 2 MARKER 3	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	1 0000 1 0000 F 5 0000 F 5 0000	ERFORM NCE 3 ATE 11/2 00 MH= 00 MH=	0 - 65	annel 72.50 dB 153.79 5.958 153.7 F 000.0	2 30000 MH 50000 MH dB 50000 MH	tz tz
FI RE SB +1 OP MARKER PARAMETERS MARKER 1 MARKER 2 MARKER 3	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN P232-00: DATE PERFORMAN P232-00: DATE PERFORMAN	ERFORM NCE 3 ATE 11/2 00 MH= 00 MH=	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	annel 72.5 dB 153.7 5.958 153.7 F 0.0 dB	2 30000 MH 38 50000 MH 80000 MH	tz tz
FI RE SE SE +1 OP MARKER PARAMETERS MARKER 1 MAPKER 2 MARKER 3 MARKER 4	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN P232-000 PERFORMAN P232-000 PERFORMAN PPERFORMAN PERFORMAN PERFORMA	ERFORM NCE 3 ATE 11 2 00 MH= 00 MH= 100 MH=	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	annel 72.51 dB 153.71 5.958 153.7 F 0.0 dB RKER NTINU	2 30000 MH 38 50000 MH 80000 MH	tz tz
FI RE SE H1 OP MARKER PARAMETERS MARKER 1 MAPKER 2 MARKER 3 MARKER 4 MARKER 4 MARKER 4 MARKER 4 MARKER 4 MARKER 5 MARKER 5 MARKER 5 MARKER MARKER PLACEMENT MARKER SEARCH	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN P232-000 GGATT D. 1 00000 FF S 000000 FF S 00000 FF S 00000 FF S 00000 FF S 00000 FF S 00000 FF S 00000 FF S	ERFORM NCE 3 ATE 11 2 00 MH= 00 MH= 100 MH=	0 1 0 0 0 0 0 0 0 0	annel 72.51 dB 153.71 5.958 153.7 F 000.0 dB RKER NTINU FF dB	2 30000 MH 38 50000 MH 80000 MH	tz tz
FI RE SE H1 OP MARKER PARAMETERS MARKER 1 MAPKER 2 MARKER 3 MARKER 4 MKR STIMULUS OFFSET REFERENCE MARKER PLACEMENT	NAL FUNC JECTION : RIAL NO. 5C DATA R: R. HO	TIONAL PIPERFORMAN P232-000 PE	ERFORM NCE 3 ATE 11 2 00 MH= 00 MH= 100 MH=	OFFI MA CO -33 -30	annel 72.50 dB 153.70 5.958 153.7 F 0.0 dB RKER NTINU FF	2 30000 MH 38 50000 MH 80000 MH	tz tz

CH2 5 ₂₁	log MAG	10 d	IB/ F	REF Ø	dB	1	0	d l	В
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CH2 START	300 00	<u>l</u> Ø MHz		S	TOP 1	000.0	100 a	00 MHz	<u>.</u>
	FI	NAL FU		NAL P	ERFORI				•
	SEI	JECTION RIAL N	O. P2	32-00					
	+40	C DATA	A Nocas	מ יחיים	מיים א	75 91			
NARKER PAR	RAMERLAND		SHULLIN		RIB_(II)	<u> </u>	unnel	2	
MARKER 1				. 0000	00 MHz		72.5	500000	MHz
		1	OFF			0	dΒ		
MARKER 2		(5 OFF	00000	zHM 06		153.7 6.89	750000 4 dB	MHz
MARKER 3			-	00000	ao mH⇒			750000	MH →
		(OFF		JC 11112	OF.		30000	11112
MARKER 4		į	5 OFF	. 00000	30 MHz	OF		909999	MHz
MKR STIMUL	US OFFSET		0 dB	. 00000	00 MHz		Ø. 0	900000	MHz
REFERENCE			OFF			MAI	RKER	1	
PLACEMENT		(ITMOS	NUOUS		CO	NTINL		
	IRCH .UE			NUOUS		-3 COI			

-3 dB OFF

OFF

MARKER TRACKING

OFF

AP	P	E	N	D	IX	F
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ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL72.5-125-10SS1 S/N_P232-603 AEROJET 1331559-6 REV. **b**

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE +22.3 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-109.0 dB	F11	(*) 80.0	MHz	<u>- 0.30</u> dB
F2	1.0	MHz	<u>-96.6</u> dB	F12	(*) 100.0	MHz	-0.41 dB
F3	5.0	MHz	<u>- 30.5</u> dB	F13	120.0	MHz	<u>-ଠ.ଧ</u> dB
F4	7.5	MHz	<u>- 9.41 dB</u>	F14	130.0	MHz	- <u>1.03</u> dB
F5	10.0	MHz	<u>- 0.86</u> dB	F15	135.0	MHz	<u>- 5.06 dB</u>
F6	15.0	MHz	<u>-0.29</u> dB	F16	140.0	MHz	<u>- 70.9 </u> dB
F7	25.0	MHz	-0.20 dB	F17	150.0	MHz	- <u>52.5</u> dB
F8	(*) 45.0	MHz	<u>- 0.1% dB</u>	F18	200.0	MHz	- <u>76.6</u> dB
F9	(*) 65.0	MHz	<u>- 0.25</u> dB	F19	500.0	MHz	- <u>106.2</u> dB
F10	72.5	MHz	<u>- 0.29 dB</u>	F20	1000.0	MHz	-101.0 dB
TEST	PERFORM	ED BY:	12. HOGGATT	DATE	1125 96	DA j	

***** END OF BANDPASS CHARACTERISTICS TEST *****

NOTE IF TEST WITNESSED BY AESD_____ GSI_

DOT WITHESSED THISTIME

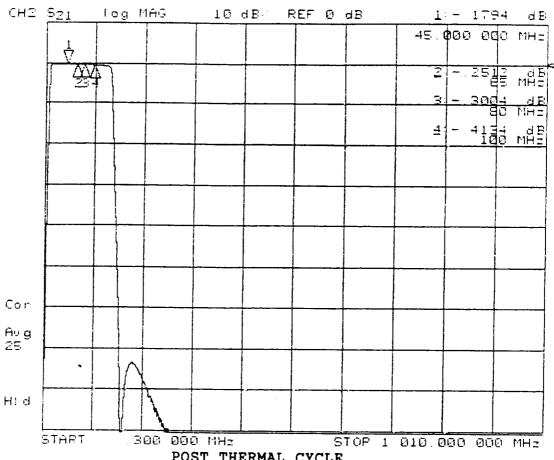
FUNCTIONAL PERFORMANCE TEST

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX F PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

Prepared in accordance with MIL-STD-100			•	
CONTRACT NO	SIZE	CAGE CODE	DWG. NO.	REV.
	Α	57032	63-0005-02	J
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APFJ.DOC	SHEET	10



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P232-003 AMBIENT

MARKER PARAMETERS OPR: R. HOGGATT DATE 11 25 96

MARKER 1	16.250000 MH≥ OFF	45.000000 MHz 1794 dB
MAPKEP 2	128 750000 MHz OFF	65.000000 MHz 2512 dB
MARKER 3	25.82 5000 MH≥ OFF	80 000000 MHz - 3004 dB
MARKER 4	119.3750ŏ0 MH± OFF	100.000000 MHz 4134 dB
MKR STIMULUS OFFSET	0.000000 MHz 6 dB	89.425802 MHz -3.2342 dB

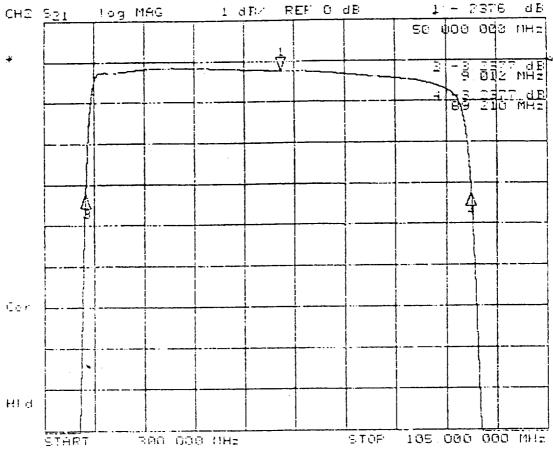
REFERENCE MARKER PLACEMENT MARKER SEARCH	OFF CONTINUOUS OFF	OFF CONTINUOUS
TARGET VALUE MARKER WIDTH VALUE	-14 dB -3 dB	OFF −3 dB −3 dB
MARKER TRACKING	OFF OFF	OFF OFF

Channel 2 Bandpass Filter

IF Filter (S/N: 1331559-3, S/N: P229-012)

API	PENDIX C	ACCEPTAN	ICE TEST REPO	RT	
BAN	NDPASS FILTER MODEL HL50 ROJET 1331559-3 REV)-80-10SS1			
ACC	dB BANDWIDTH CEPTANCE TEST PROCEDUR 0005-02 PARA 4.5.3	E	-10°C	+15°C	+40°C
{7} L	JPPER 3.0 dB BANDEDGE		89.21 MHz (88.0-90.0)	89.06 Mhz (88.0-90.0)	<u>ଷ୍ଟ୍ରେ. </u>
{8} L	OWER 3.0 dB BANDEDGE		9.01 MHz (8.0-10.0)	9.00 Mhz (8.0-10.0)	<u>8,99 </u> MHz (8.0-10.0)
{9} 3	.0 dB RELATIVE BANDWIDTH		<u>80.20</u> MHz (78.0-82.0)	<u>名0.0に</u> Mhz (78.0-82.0)	7 <u>9.93</u> MHz (78.0-82.0)
{10}	ADD {7} AND {8} ÷ 2 =		¹ 19.11 MHz (50.0 NOM)	<u>49.03</u> мHz (50.0 NOM)	4 <u>გ.ყ.</u> Mhz (50.0 NOM)
{10a}	RECORD MEASURED TEMP		<u>-17.9</u> °C (-15.0 TO -10.0)	+ <u>I6.3</u> °C (12.5 TO 17.5)	+ <u>43.7</u> °C (40.0 TO 45.0)
	TTACH TRANSMISSION LOSS FORMANCE X-Y PLOT	6	<u> </u>	<u> </u>	<u> </u>
ACCE	SBAND RIPPLE EPTANCE TEST PROCEDURE 105-02 PARA 4.5.4		-10°C	+15°C	+40°C
{11a}	MIN INSERTION LOSS FREQ	1	27.26 MHz	27.60 Mhz	27.00MHz
	MIN INSERTION LOSS PERF	ORMANCE	- <u>0.1L</u> dB	- <u>0.17</u> dB	- <u>0.18</u> dB
{11b}	75% BW LOWER BANDEDGE	FREQ	11.03 MHz	1 <u>0.96</u> Mhz	[6.9] MHz
	75% BW LOWER BANDEDGE	E I.L. PERF	<u>- 0.40</u> dB	- <u>0.43</u> dB	- <u>045</u> dB
{11c}	75% BW UPPER BANDEDGE	FREQ	71,03 MHz	70.90Mhz	7 <u>6.91</u> mHz
	75% BW UPPER BANDEDGE	I.L. PERF	-0.40 dB	- <u>0.43</u> dB	- <u>0.45</u> dB
{11d}	PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})		O.24 dB	<u>0.26</u> dB	<u>0.27</u> dB
{11e}	PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})		<u>0.24</u> dB	C.26 dB	<u>0.27</u> dB
pared in ac	cordance with MIL-STD-100	SIZE	AGE CODE	DIA/G NO	

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APCJ.DOC	SHEET	13

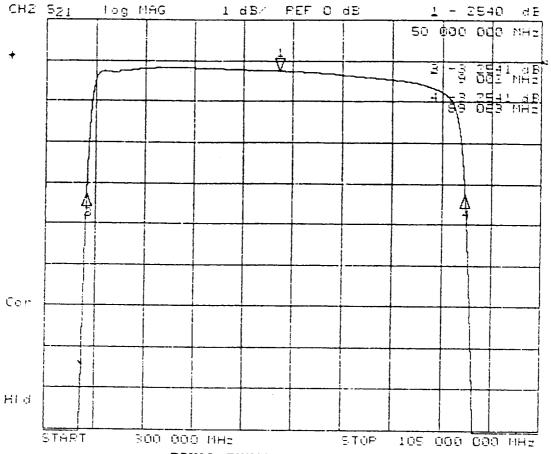


FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-012 -10C DATA

PRESELS PARAMETALL L

OPR: R. HOGGATT DATE DEC 1 8 1996

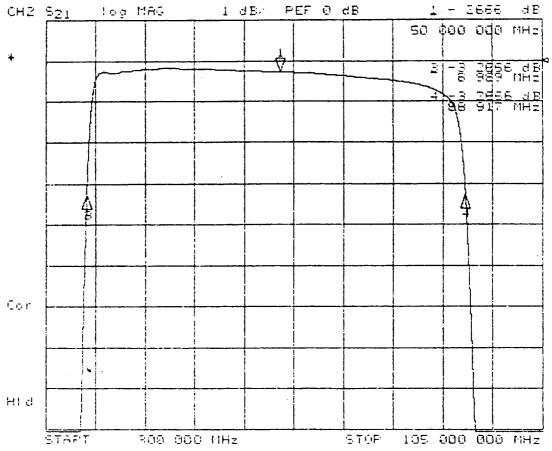
MARKER 1	14 008000 MHz OFF	50 000000 NHz - 2376 dB
HARKER 2	86 000000 MHz OFF	49.111420 MHz OFF
MARKER 3	20.000000 MH≥ ⊙FF	9 012366 MHz -3 2377 dB
MARKER 4	80 000000 MHz OFF	89 210474 MHz -3 2377 dB
THE STIMULUS OFFSET	0.000000 MHz 0 dE	89.4258 02 MHz -3 2343 dB
PEFERENCE MARKER PLACEMENT MARKER SEARCH TARGET MALUE MARKER MIDTH MALUE MARKER TRACKING	OFF	OFF CONTINUOUS OFF -3 dB -2 dB OFF
A ROOM ALONG THE PROPERTY OF	-1 I	₩1. •



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-012 +15C DATA

MARKER	PARAME, L.J	OPR:	R.	HOGGATT	DATEDEC	18	1996	•	_
	- 1 10 (11) has 1 aug							anel	_

MARKER :	14 000000 MH±	50.000000 MH± - 2540 dB
MARKER 2	88 000000 MHz OFF	49 032675 MH±
MARKER 3	20 000000 MH± OFF	9.002168 MHz -3 2541 dB
HARKER 4	80.000000 MH± 0FF	89 063183 MHz -3.2541 dB
MKR STIMULUS OFFSET	0 000000 MH≥ 0 d₽	89 425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET MALUE MARKER WIDTH MALUE MARKER TRACKING	OFF CONTINUOUS OFF -14 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-012

+40C DATA

MARKER PARAME OPR: R. HOGGATT DATE DEC 18 1896

MARKER 1	14 000000 MHz 0FF	50 000000 MH: - 2086 db
nam Em 3	96.000000 HH≥ OFF	48,953472 MHz OFF
MARKER 3	20 000030 MH≥ 0FF	8.989862 MHz -3 2666 dB
MARILER 4	80 000000 MH= ≎FF	88 917083 MH: -3 2666 dB
MRR STIMULUS OFFSET	©.0000000 MH≥ 0 dB	89.425802 MHz -3 2342 dB
PEFERENCE MARKER FLACEMENT MARKER SEARCH TARGET WALUE MARKER MIDTH WALUE MARKER TRACKING	OFF CONTINUOUS OFF -14 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF

APPENDIX C

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL50-80-10SS1 S/N P229 -GIZ AEROJET 1331559-3 REV.________

PASSBAND RIPPLE (CON'T)

{11f} RECORD PASS/FAIL	(0.5 dB MAX)
------------------------	--------------

(PASS/FAIL

(PASS/FAIL

(11g) ATTACH PASSBAND RIPPLE

PERFORMANCE X-Y PLOT(S)

OUT-OF-BAND REJECTION

63-0005-02 PARA 4.5.5

ACCEPTANCE TEST PROCEDURE

-10°C

+15°C

+40°C

Fc=50.0 MHz.

REF (5A) FOR INSERTION LOSS @ Fc

{12} WORST CASE REJECTION FROM 0.300 MHz TO 1.0 MHz

>100 dB (40.0 dB MIN) >100_dB (40.0 dB MIN)

>100 dB (40.0 dB MIN)

{13a} WORST CASE REJECTION FROM 102.0 MHz TO 1000.0 MHz

- 53.7 dB (40.0 dB MIN) -54.5 dB (40.0 dB MIN)

 $-55.3\,\mathrm{dB}$ (40.0 dB MIN)

{13c} RECORD MEASURED TEMPERATURE

-13.0 °C

+ 6.1 °C (-15.0 TO -10.0) (12.5 TO 17.5) +43.8 °C (40.0 TO 45.0)

{14} ATTACH REJECTION PERFORMANCE

X-Y PLOT(S)

TEST PERFORMED BY 12. HOGG

Not witnessed NOTE IF TEST WITNESSED BY AESD: this time. DLD

***** END OF FUNCTIONAL PERFORMANCE TEST ****

OUTLINE AND MOUNTING DIMENSIONS VERIFICATION

{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT

DIMENSION AND TOLERANCE

ACTUAL MEASUREMENT

OVER ALL LENGTH

 $3.50 \pm .03$

3.499

MOUNTING HOLE CENTER

 $0.125 \pm .010$

0.124

BETWEEN UPPER MOUNTING HOLES

3.250

3.251

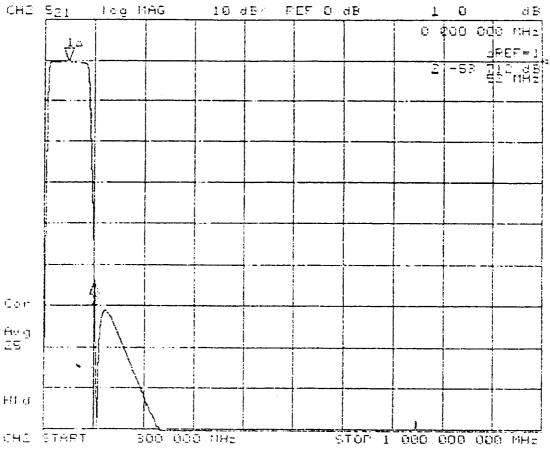
BETWEEN LOWER MOUNTING HOLES

3.250

3 250

epared in accordance with MIL-STD-100

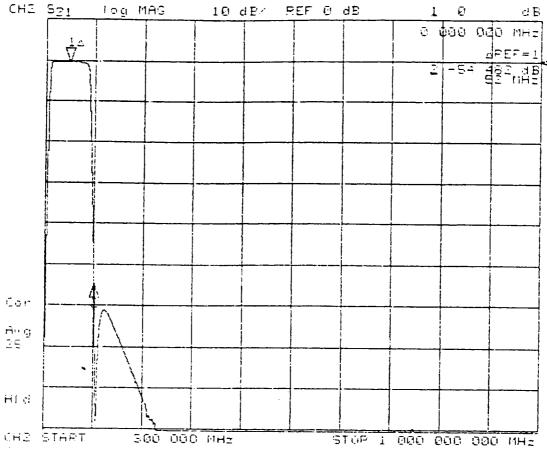
CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE. AC	AD/63/0502APCJ.DOC	SHEET	14



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-012 -10C DATA

PREFILER PROMISE. OPR: R. HOGGATT DATESE 18 1996

MARKER I	1 000000 MH± 055	50 000000 MHz 0 dB
MARKER Z	5 000000 MH≥ GFF	102.000000 MH: -53 712 dB
MARKER 3	5.000000 MH≥ GEF	103 0000 00 MH . OFF
MARINER 4	5.000000 MHz OFF	1600 060000 HHz OFF
MKP STIMULUS OFFSET	0 000000 MHz 0 dB	0 000000 NHz 0 dB
PEFERENCE MARKER PLACEMENT MARKER SEARCH YARGET MALUE MARKER MIDTH MALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	MARKER I CONTINUOUS OFF -3 dB -3 dB OFF



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-012

+15C DATA

MARKER TRACKING

MARKER PARAME.L. J	HOGGATT DATE DEC 1 8	3 1996 Lonnel 2
MARKER 1	1 000000 MHz OFF	50 000000 NH: 0 d8
MARKER 2		102 000000 MHz -54 482 dB
MARKER 3		102 000000 MH±
MARKER 4		1000 000000 MHz OFF
MKP STIMULUS OFFSET	0.000000 NHz 0 dB	0 98 0 000000 WHS
PLACEMENT MARKER SEAPCH	CONTINUOUS OFF	MAPKEP 1 CONTINUOUS OFF MAPKEP 1

OFF

CH2 5 <u>21 1</u>	og MAG	10 dB/ F	REF C	iB	1		d E
$\sqrt{\frac{1}{V}}$					0 00	000 00 000	MHZ REF=1
V					2 -	-55 3	
						Ì	
Cor 4							
1 - 1							
Ang 25							
HId	3 1 1 1 1 1 1 1 1 1 1						
CH2 START	300 000	I filez				30 OO	O MH=

FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-012

+40C DATA

	OPR:	R.	HOGGATT	DATE DEC 18 1	996	_
MAPKER PARAMETUL				-	. Lange	٠

MARKER 1	1 000088 MH= OFF	50 000000 MA: 0 dB
MARKER 2	ട ០ ០៧០០០ MH≥ ೧೯೯	102 000000 MHz -95.321 dB
манкен з	5 ହଉପଷତତ MHz ତମ୍ମ	102 000000 MHz OFF
MARKER 4	5 000000 MH ₂ OFF	1000 000000 NH: OFF
MKR STIMULUS OFFSET	0 000000 MHz 0 dB	0 0000000 NH2
PEFERENCE MAPKER PLACEMENT MARKER SEARCH TARGET WALUE MMRKER NIDTH MMLUE MARKER TRACKING	0FF CONTINUOUS 0FF -3 dB -3 dB 0FF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF OFF

APPENDIX C

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL50-80-10SS1 SIN P229 - GIZ AEROJET 1331559-3 REV. ____

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +22.4 °C (+19°C TO +29.0°C)

(15) ATTACH PASSBAND PERFORMANCE X-Y PLOT

(1)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE		REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-104.5dB	•	F11	(*) 60.0	MHz	
F2	1.0	MHz	- 95.2 dB		F12	(*) 70.0	MHz	<u>-0.31</u> dB -0.41dB
F3	5.0	MHz	-31.3 dB		F13	80.0	MHz	- 0.62 dB
F4	7.5	MHz	-10.7 dB		F14	85.0	MHz	<u>-0.82</u> dB
F5	10.0	MHz	-1.49 dB		F15	90.0	MHz	-5.77 dB
F6	15.0	MHz	-0.30 dB		F16	100.0	MHz	- 44.5 dB
F7	20.0	MHz	-0.21 dB		F17	200.0	MHz	- 62.2 dB
F8	(*) 30.0	MHz	-0.18 dB		F18	300.0	MHz	
F9	(*) 40.0	MHz	-0.23 dB		F19	500.0	MHz	-108.5 dB
F10	50.0	MHz	-0.27 dB		F20	1000.0	MHz	-107.3 dB
~		-			. 20	1 1	IVITIZ	<u>-104.1</u> dB

TEST PERFORMED BY 12 HOGGET DATE 17 18 96

NOTE IF TEST WITNESSED BY AESD Not witnessed this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

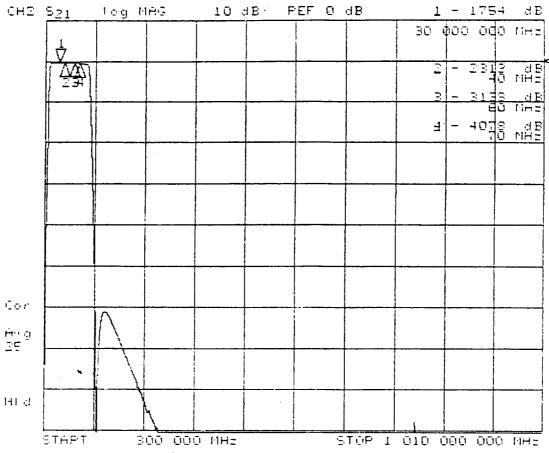
ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX C PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

repared in accordance with MIL-STD-100

DADEN ANTHONY ASSOCIATION	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: ACAD/63/0502APCJ.DOC		SHEET	11



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P229-012 AMBIENT

THAPTER PAPAMELL.	HOGGATT DATE DEC 1	<u>8 1996</u> nnet 2
MARKER 1	30 000000 MH±	30 000000 MHz - 1754 dB
MARKER 2		40 000000 MHz -:2313 dB
MARKER 3	60 000000 MHz OFF	- 3138 4B - 60 000000 MHz
MARKER 4	70 000000 MHz OFF	70 000000 MH± - 4078 dB
MKR STIMULUS OFFSET	0 000000 MHz 0 dB	0 G00000 WH:
PLACEMENT MARKER SEARCH		OFF CONTINUOUS OFF -3 dB -4 dB OFF

OFF

OFF

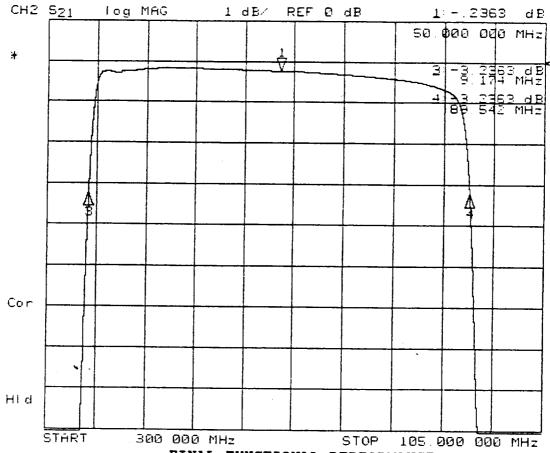
MARKER TRACKING

Channel 3 Bandpass Filter

IF Filter (S/N: 1331559-3, S/N: P229-002)

	APPENDIX C	OLIALIEICA	TION TEST DED	NDT.	
	ALLENDIA S	QUALIFICA	TION TEST REPO	ZKI	
	BANDPASS FILTER MODEL HL5 AEROJET 1331559-3 REV.	50-80-10SS1 : 	s/n <u>P229-</u> 00	2	
	3.0 dB BANDWIDTH QUALIFICATION TEST PROCED 63-0005-010 PARA 4.5.3	URE	-10°C	+15°C	+40°C
	{7} UPPER 3.0 dB BANDEDGE		<u>89.54</u> MHz (88.0-90.0)	<u> </u>	<u>89.24 </u> MHz (88.0-90.0)
	(8) LOWER 3.0 dB BANDEDGE		9.17 MHz (8.0-10.0)	9.16 Mhz (8.0-10.0)	<u>4.15</u> MHz (8.0-10.0)
	(9) 3.0 dB RELATIVE BANDWIDTI		<u>80.37</u> MHz (78.0-82.0)	80.24 Mhz (78.0-82.0)	<u>80.09</u> мнz (78.0-82.0)
	{10} ADD {7} AND {8} ÷ 2 =		4 <u>9.36</u> MHz (50.0 NOM)	49.28 MHz (50.0 NOM)	4 <u>9.20</u> Mhz (50.0 NOM)
	(10a) RECORD MEASURED TEMI		- <u>13.4</u> °C (-15.0 TO -10.0)	+ <u>14.5</u> °C (12.5 TO 17.5)	+ <u>44.0</u> °C (40.0 TO 45.0)
	(6) ATTACH TRANSMISSION LOS PERFORMANCE X-Y PLOT	SS	(√)	<u> </u>	<u> </u>
(PASSBAND RIPPLE QUALIFICATION TEST PROCEDU 33-0005-010 PARA 4.5.4	JRE	-10°C	+15°C	+40°C
{	11a} MIN INSERTION LOSS FRE	Q	27.00 MHz	<u>27.∞</u> Mhz	27.00 MHz
	MIN INSERTION LOSS PER	RFORMANCE	- <u>0.17</u> dB	-0.17 dB	- <u>0.18</u> dB
{	11b) 75% BW LOWER BANDEDG	SE FREQ	11.70 MHz	11.12 Mhz	11.06MHz
	75% BW LOWER BANDEDO	GE I.L. PERF	- <u>0.39</u> dB	- <u>041</u> dB	- <u>0.43</u> dB
{	11c) 75% BW UPPER BANDEDGI	E FREQ	71.20 MHz	71.12Mhz	71.06MHz
	75% BW UPPER BANDEDG	E I.L. PERF	- <u>0.39</u> dB	- <u>0.41</u> dB	- <u>0.43</u> dB
{	11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})		0.22 dB	0.24 dB	<u>O.25</u> dB
{′	11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})		<u>0.22</u> dB	<u>0.25</u> dB	0.25 dB

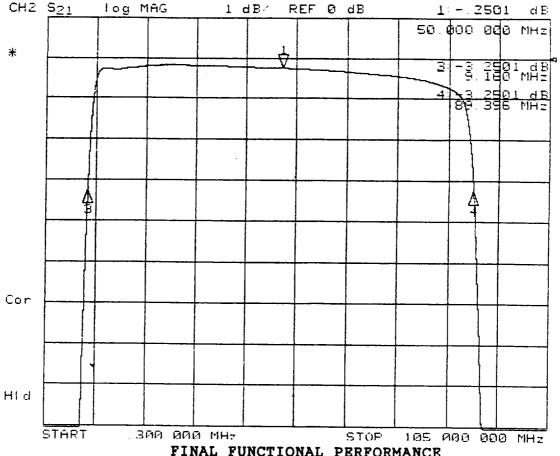
DADEN-ANTHONY ASSOCIATES INC	A	57032 AD/83/0510APCH.DOC	63-0005-010 SHEET	Н
CONTRACT NO.	SIZE	CAGE CODE	DWG. NO.	REV.



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-002 -10C DATA

	-IOC DAIN			1 1		
445 E.V. E E E	OPR:	R.	HOGGATT	DATE 11/26/96		
MARKER PARAME, L.C.			J., J.,		2	

MARKER 1	14.000000 MH≥ OFF	50.000000 MHz 2363 dB
MARKER 2	86.000000 MH± OFF	49.358422 MHz QFF
MARKER 3	20.000000 MHz OFF	9.1742 68 MH ± -3 2363 dB
MARKER 4	80.000000 MH≥ OFF	89.542576 MHz -3 2363 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -14 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-002 +15C DATA

OPR: R. HOGGATT DATE 11 76 96

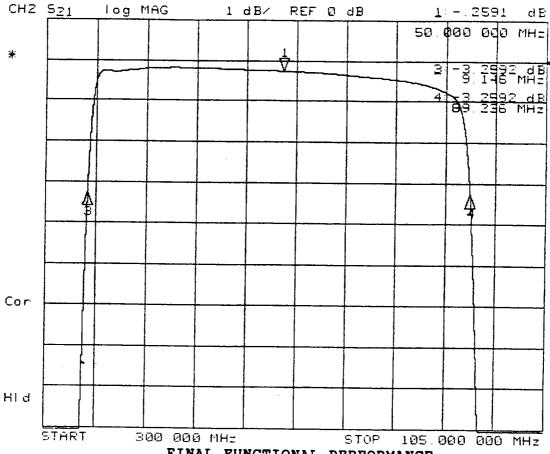
MARKER PARAMETERS	HOGGATT DATE 11 ZG	<u>196</u> Counnel 2
MARKER 1	14.000000 MHz OFF	50.000000 MHz - 2501 dB
MARKER 2	86 000000 MHz OFF	49.278697 MH≥ OFF
MARKER 3	20 000000 MHz OFF	9.1 6088 4 MHz -3.2501 dB
MARKER 4	80.000000 MH± OFF	89.396511 MHz -3.2501 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB	OFF CONTINUOUS OFF -9 dB -3 dB

OFF

OFF

MARKER TRACKING

OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P229-002 +40C DATA

MARKER PARAME. OPR: R. HOGGATT DATE 11/24/96

MARKER TRACKING

MARKER 1	14.000000 MHz OFF	50.000000 MHz 2591 dB
MARKER 2	86.000000 MHz OFF	49.191579 MHz OFF
MARKER 3	20.000000 MHz OFF	9.146384 MHz -3.2592 dB
MARKER 4	80.000000 MH≥ OFF	89.236775 MHz -3.2592 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF

OFF

APPENDIX C QUALIFICATION TEST REPORT BANDPASS FILTER MODEL HL50-80-10SS1 S/N P229-GCZ AEROJET 1331559-3 REV. PASSBAND RIPPLE (CON'T) (PASS)FAIL {11f} RECORD PASS/FAIL (0.5 dB MAX) PASS/FAIL (PASS)FAIL (1) (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** QUALIFICATION TEST PROCEDURE -10°C +15°C +40°C 63-0005-010 PARA 4.5.5 Fc=50.0 MHz. REF (5A) FOR INSERTION LOSS @ Fc > 100 dB **{12} WORST CASE REJECTION FROM** > 00 dB >100 dB 0.300 MHz TO 1.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) -53.2 dB -54. I dB - 54.4 dB {13a} WORST CASE REJECTION FROM 102.0 MHz TO 1000.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13c} RECORD MEASURED TEMPERATURE -13.5 °C + 14.5°C +44.0°C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) **{14} ATTACH REJECTION PERFORMANCE** X-Y PLOT(S) TEST PERFORMED BY 12 HOGGAIL DATE NOTE IF TEST WITNESSED BY AESD: _____ GSI: NOT WIT DESSED ***** END OF FUNCTIONAL PERFORMANCE TEST **** **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION {16} REFERENCE CUSTOMER DRAWING 1331559 DESCRIPTION OF DIMENSION AND** ACTUAL **MEASUREMENT** TOLERANCE MEASUREMENT 3,50 OVER ALL LENGTH $3.50 \pm .03$ MOUNTING HOLE CENTER 0.125 ± .010 ,126

Prepared in accordance with MIL-STD-100				_
CONTRACT NO.	SIZE	CAGE CODE 57032	DWG. NO.	REV.
	^	57032	63-0005-010	<u> </u>
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APCH.DOC	SHEET	14

3.250

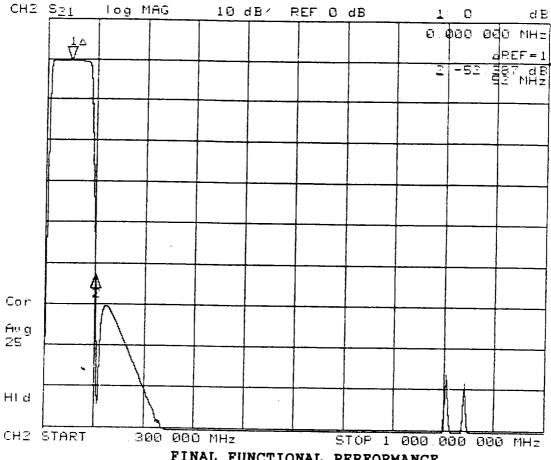
3.250

BETWEEN UPPER MOUNTING HOLES

BETWEEN LOWER MOUNTING HOLES

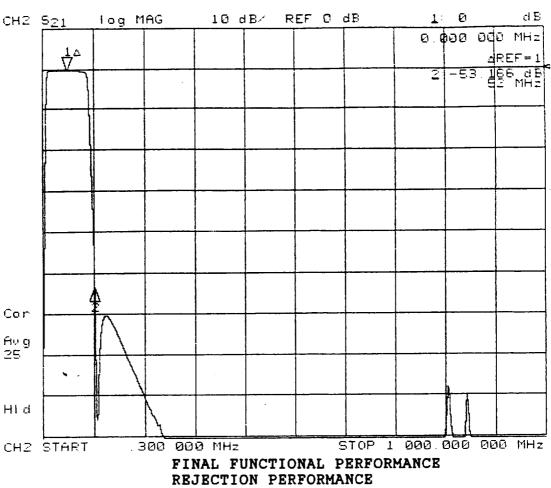
3.250

3,250



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-002 -10C DATA

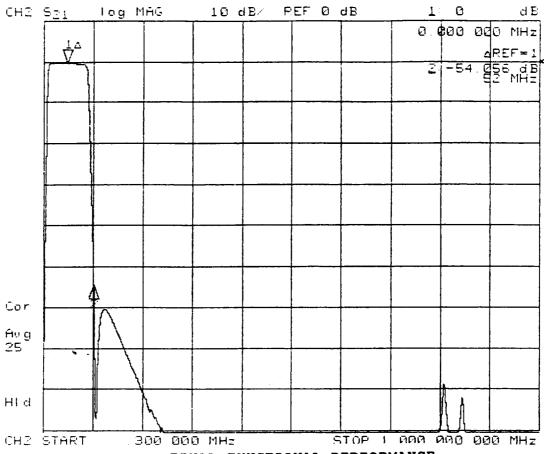
MARKER 1	1 0000000 MH± OFF	50.000000 MH≥ 0 dB
MARKER 2	5.000000 MHz OFF	102.000000 MH≥ -52.387 dB
MARKER 3	5.000000 MH≥ OFF	103.000000 MH≥ OFF
MARKER 4	5.000000 MH≥ OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MH± 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB
MARKER TRACKING	OFF	OFF OFF



SERIAL NO. P229-002 +15C DATA

MARKER	PARAMETERS	+15C OPR:	R.	HOGGATT	DATE 11 26 96 Junione 1	2

MARKER 1	1.000000 MHz OFF	50.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	102.000000 MHz -53.166 dB
MARKER 3	5.000000 MHz OFF	102.000000 MHz OFF
MARKER 4	5.000000 MH≥ OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF OFF



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P229-002

OPR: R. HOGGATT DATE 11/26/96

+40C DATA

MARKER TRACKING

	HOGGATT DATE THE COMMENT	Grunnel 2
MARKER 1	1.000000 MHz OFF	50.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	102.000000 MHz +54.056 dB
MARKER 3	5.000000 MH≥ OFF	102.000000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MH= 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF

OFF

APPENDIX C

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HE50-80-10SS1 S/N P229-602 AEROJET 1331559-3 REV._____

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +23.5 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-103.6dB	F11	(*) 60.0	MHz	
F2	1.0	MHz	-45.1 dB	F12	(*) 70.0	MHz	- <u>0.32</u> dB
F3	5.0	MHz	-32.1 dB	F13	80.0		- <u>0.40</u> dB
F4	7.5	MHz	- 11.6 dB	F14		MHz	- <u>0.61</u> dB
F5	10.0	MHz	-1.72 dB		85.0	MHz	- <u>0.87</u> dB
F6	15.0	MHz		F15	90.0	MHz	- <u>4.95</u> dB
F7		· · · —	-0.31 dB	F16	100.0	MHz	- 43.2 dB
	20.0	MHz	<u>- 0.23 </u> dB	F17	200.0	MHz	-80.2 dB
F8	(*) 30.0	MHz	<u>-0.18</u> dB	F18	300.0	MHz	-101.1 dB
F9	(*) 40.0	MHz	<u>- 0.22 dB</u>	F19	500.0	MHz	-103.3 dB
F10	50.0	MHz	-0.2C_dB	F20	1000.0	MHz	-104.9 dB
TEST	PERFORM	ED BY:_	R. HOGGATT	DATE_	11/26/96	(OA)	<u> </u>

NOTE IF TEST WITNESSED BY AESD_____ GSI

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX C PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER QTP PARA 4.5.1.
- b.) INSERTION LOSS PER QTP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER QTP PARA 4.5.5.

Prepared in accordance with MIL-STD-100 CONTRACT NO.				
CONTRACT NO.	SIZE	CAGE CODE	DWG. NO.	REV.
DADEN ANTERONIA	A	57032	63-0005-010	H H
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APCH.DOC	SHEET	11

CH2	S ₂₁	log M	AG	10	dB/	REF	0 d	B	1	1	818	d B
	$\frac{1}{\nabla}$								30.	000	ପପପ	MHZ
			,						2	2	243	MHz
	 				┼		-		3	- 3	1 <u>념주</u>	HE NHE
									4		981 981	d B MHz
							+					
Con												
Av.g 25												
НIЯ												
CH2	START	. 30	10 000	1 NHz		 	ST	OP 1	010	100 0	100	MHz
			POS	מידי ידי	PDMAI	CVC						· -

POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P229-002 AMBIENT

MARKER PARAMET OPR: R. HOGGATT DATE 11 76 96

OFF2243 dB MARKER 3 5.000000 MHz 60.000000 M OFF3157 dB MARKER 4 5.000000 MHz 70.000000 M OFF3981 dB MKR STIMULUS OFFSET 0.000000 MHz 0.000000 M O dB 0 dB REFERENCE MARKER OFF OFF			
OFF2243 dB MARKER 3 5.000000 MHz 60.000000 M OFF -3157 dB MARKER 4 5.000000 MHz 70.000000 M OFF3981 dB MKR STIMULUS OFFSET 0.000000 MHz 0 dB REFERENCE MARKER OFF OFF	MARKER 1	1.000000 MHz OFF	
OFF - 3157 dB MARKER 4	MARKER 2		
OFF 78.00000 NH2 78.00000 N MKR STIMULUS OFFSET 0.000000 MHz 0.000000 M Ø dB Ø dB REFERENCE MARKER OFF OFF	MARKER 3		
0 dB 0 dB REFERENCE MARKER OFF OFF	MARKER 4		
DI COMMENT	MKR STIMULUS OFFSET		0 000000 MHz 0 dB
MARKER SEARCH OFF OFF THRGET VALUE -3 dB -3 dB MARKER WIDTH VALUE -3 dB OFF OFF MARKER TRACKING OFF OFF	PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	CONTINUOUS OFF -3 dB -3 dB OFF	CONTINUOUS OFF -3 dB -3 dB OFF

Channel 4 Bandpass Filter

IF Filter (S/N: 1331559-2, S/N: P228-003)

PENDIX B

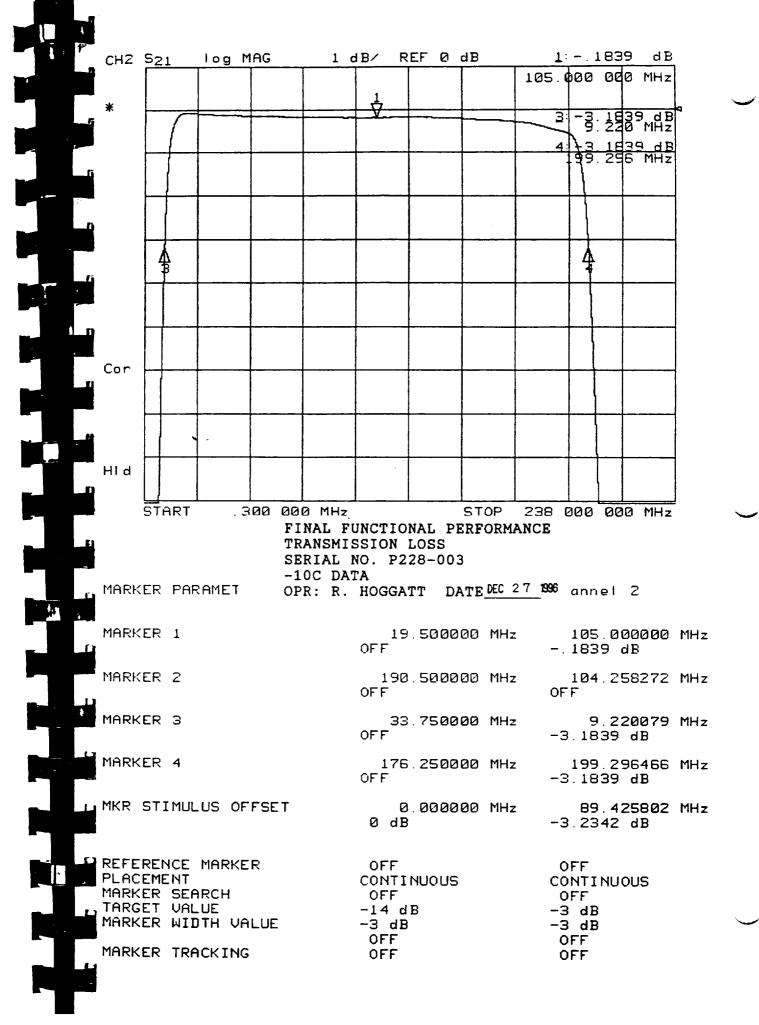
QUALIFICATION TEST REPORT

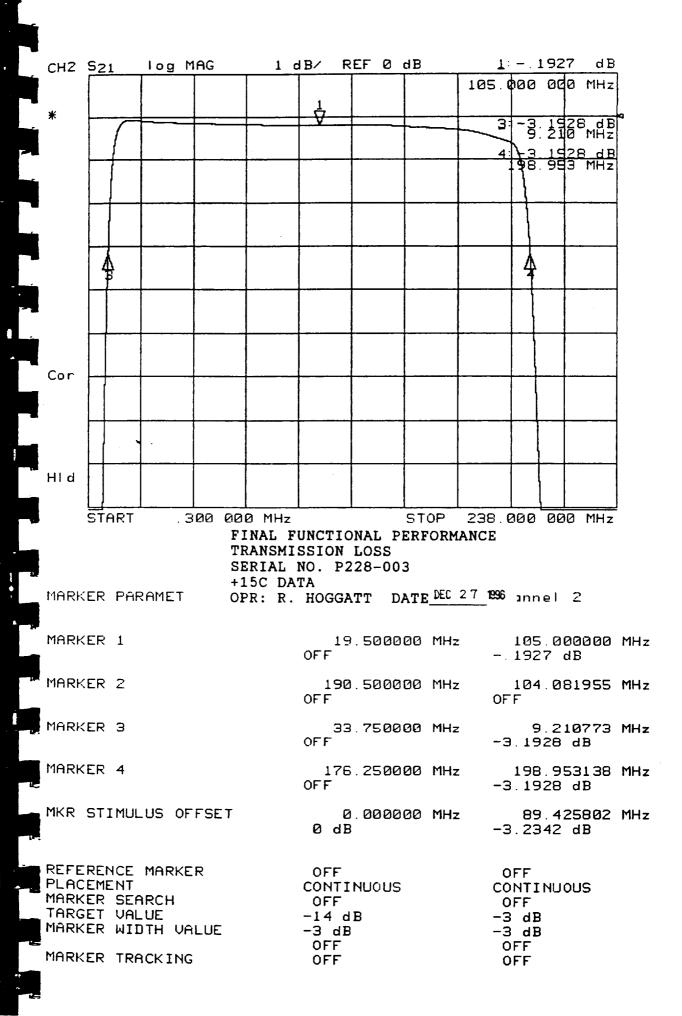
BANDPASS FILTER MODEL HL105-190-10SS1 S/N P228-003 AEROJET 1331559-2 REV.

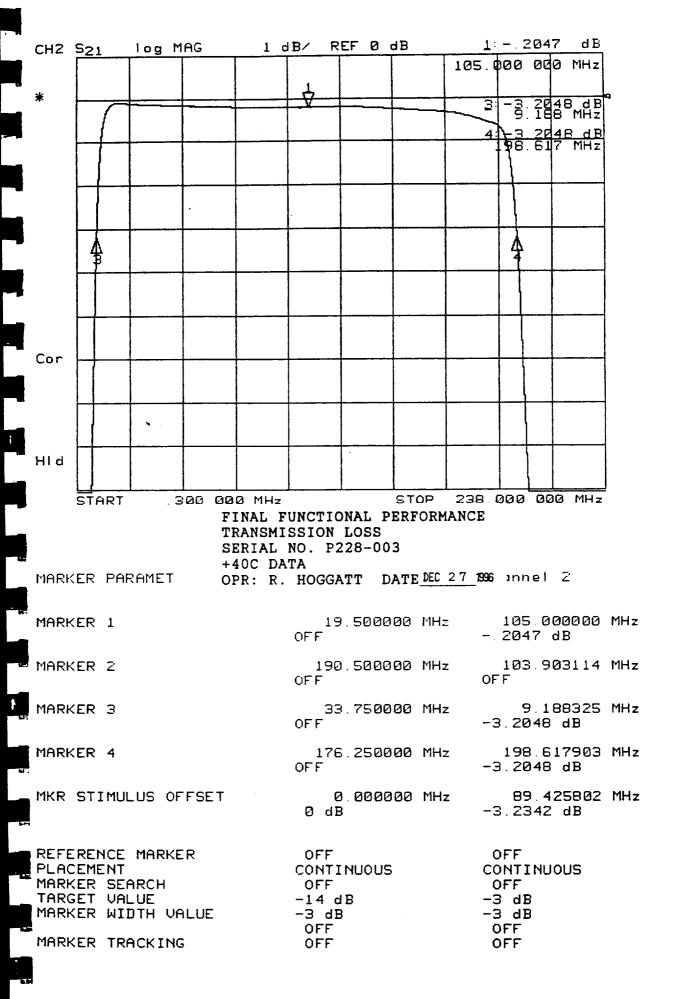
AEROJET 1331339-2 REV			
3.0 dB BANDWIDTH QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.3	-10°C	+15°C	+40°C
(7) UPPER 3.0 dB BANDEDGE	1 <u>99.30</u> MHz (198.0-200.0)	1 <u>98,95</u> Mhz (198.0-200.0)	1 <u>98.62 MHz</u> (1480.01500.0)
{8} LOWER 3.0 dB BANDEDGE	9.22 MHz (8.0-10.0)	9.21 Mhz (8.0-10.0)	<u>역 . 19 MHz</u> (8.0-10.0)
(9) 3.0 dB RELATIVE BANDWIDTH	1 <u>90.05</u> MHz (188.0-192.0)	1 <u>89.74</u> Mhz (188.0-192.0)	। <u>६९.५3 </u> MHz (188.0-192.0)
{10} ADD {7} AND {8} ÷ 2 =	104.26 MHz (105.0 NOM)	1 <u>04.0%</u> MHz (105.0 NOM)	1 <u>03.91</u> Mhz (105.0 NOM)
(10a) RECORD MEASURED TEMPERATURE	- <u>13.4</u> °C (-15.0 TO -10.0)		+ <u>43.4 °</u> C (40.0 TO 45.0)
(6) ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	(\forall)	<u> </u>	<u>/</u> (\(\frac{1}{2}\))
PASSBAND RIPPLE QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.4	-10°C	+15°C	+40°C
(11a) MIN INSERTION LOSS FREQ	19.32 MHz	19.91 Mhz	19.92 MHz
MIN INSERTION LOSS PERFORMANCE	E - <u>0.07</u> dB	- <u>0.07</u> dB	- <u>0.08</u> dB
{11b} 75% BW LOWER BANDEDGE FREQ	14.17 MHz	14.02 Mhz	13.86 MHz
75% BW LOWER BANDEDGE I.L. PERF	- <u>0.24</u> dB	-0.26 dB	- <u>0.78</u> dB
{11c} 75% BW UPPER BANDEDGE FREQ	1 <u>56.67</u> MHz	1 <u>56.52</u> Mhz	156.36MHz
75% BW UPPER BANDEDGE I.L. PERF	-0.24 dB	- <u>0.26</u> dB	- <u>0.28</u> dB
{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	<u>0.17</u> dB	- <u>0.19</u> dB	<u>0.20</u> dB
{11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})	<u>C.17</u> dB	- <u>0.19</u> db	0.20 dB

'repared	in accordance	with	MIL-STD-100
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CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE AC	AD/63/0510APBH.DOC	SHEET	13







APPENDIX B QUALIFICATION TEST REPORT BANDPASS FILTER MODEL HL105-190-10SS1 S/N P228-003 AEROJET 1331559-2 REV. PASSBAND RIPPLE (CON'T) (PASS)FAIL {11f} RECORD PASS/FAIL (0.5 dB MAX) (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** QUALIFICATION TEST PROCEDURE -10°C

63-0005-010 PARA 4.5.5 Fc=105.0 MHz. REF (5A) FOR INSERTION LOSS @ Fc

{12} WORST CASE REJECTION FROM 0.300 MHz TO 1.0 MHz

{13a} WORST CASE REJECTION FROM 228.5 MHz TO 1000.0 MHz

{13c} RECORD MEASURED TEMPERATURE -13,3 ℃

{14} ATTACH REJECTION PERFORMANCE X-Y PLOT(S)

TEST PERFORMED BY 16 HOGGAN

DATE 12/27/96

-59.4 dB

-41.4 dB

(40.0 dB MIN)

(-15.0 TO -10.0) (12.5 TO 17.5)

Not witnessed

NOTE IF TEST WITNESSED BY AESD: _____ GSI: _ this time. DLD

***** END OF FUNCTIONAL PERFORMANCE TEST ****

OUTLINE AND MOUNTING DIMENSIONS VERIFICATION

{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT OVER ALL LENGTH

MOUNTING HOLE CENTER BETWEEN UPPER MOUNTING HOLES

BETWEEN LOWER MOUNTING HOLES

DIMENSION AND

ACTUAL TOLERANCE **MEASUREMENT**

+15°C

-59.3 dB

-41.4 dB

+15.1°C

(40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN)

+40°C

-59,3 dB

-41.5 dB

+43.2 ℃

(40.0 TO 45.0)

(40.0 dB MIN) (40.0 dB MIN)

 $3.50 \pm .03$

0.125 ± .010

0.127

3.560

3.250 3.250

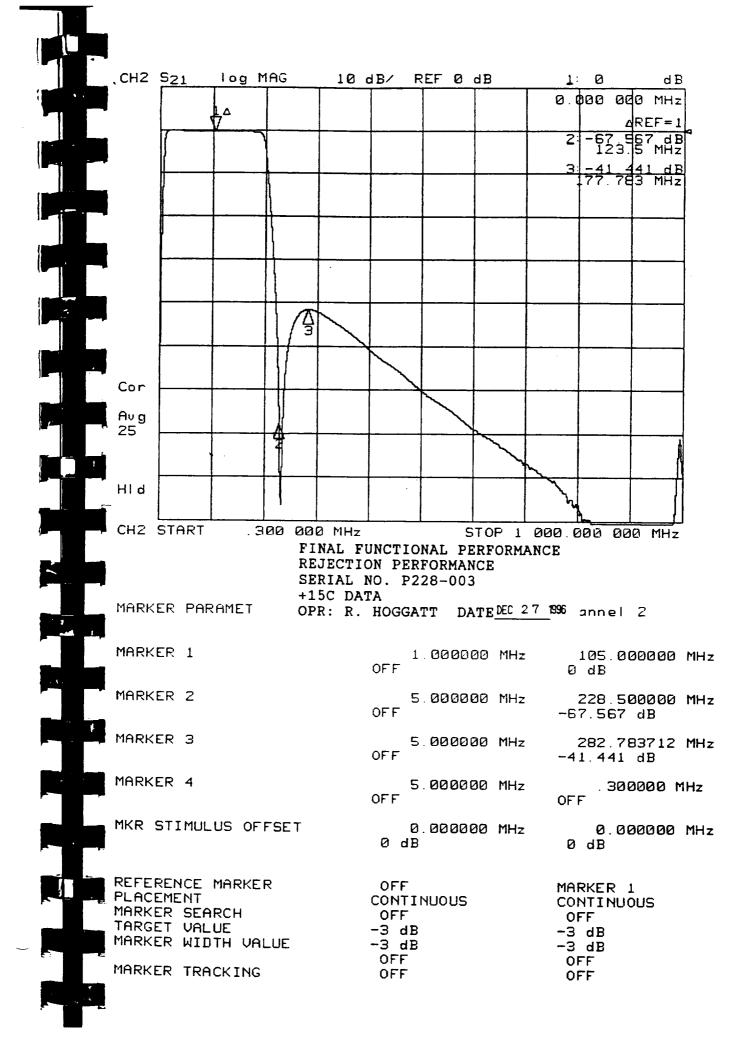
3.250 3.250

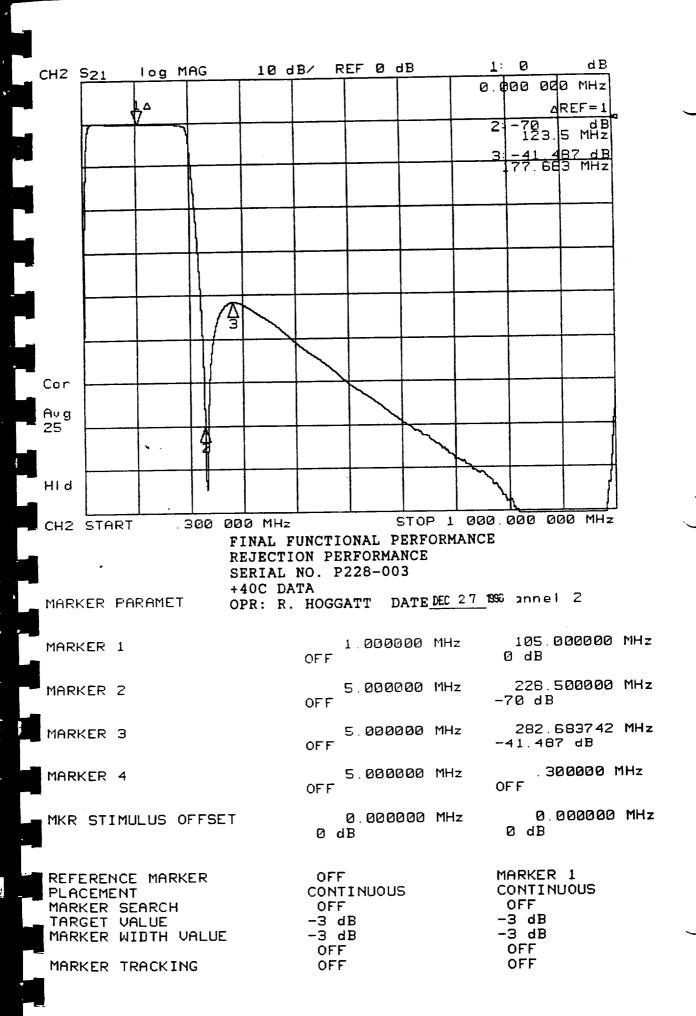
Prepared in accordance with MIL-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	F'LE: AC	AD/63/0510APBH.DOC	SHEET	14

CU2 50.	log MAG	10 dB/	RFF 0	dВ	1: 0	d B
CH2 521	TOG TING	10 00	T			ødø MHz
	<u>‡</u> △					AREF=1
, 7					2:-65	347 dB 3.5 MHz
		·			i	413 dB 683 MHz
					179.	683 MHz
	/ 3					
Cor Avg						
25			 			
				1		
НІО					March 1	
CH2 START	300 000	MHz		STOP 1	<u> </u>	000 MHz
	FI	NAL FUNCT	ONAL P	ERFORMA		
		JECTION PI				
MARKER PA	-10	OC DATA R: R. HOGO			<u>7 1996</u> ann	el 2
MARKER 1		OFF	1.0000	00 MHz	105 0 dB	.000000 MHz
MARKER 2		OFF	5.0000	00 MHz	228 -65.3	.500000 MHz 47 dB
MARKER 3		OFF	5.0000	00 MHz	284 -41.4	.683142 MHz 13 dB
MARKER 4		OFF	5.0000	00 MHz	OFF	300000 MHz
MKR STIMU	LUS OFFSET	Ø	0.0000 db	100 MHz	Ø Ø dB	.000000 MHz
•	ARCH LUE DTH VALUE	CON' OFI -3 (-3 (OFI	- 4B -4B	:	MARKE CONTI OFF -3 dB -3 dB OFF	HUOUS
MARKER TR	ACKING	OFI	-		OFF	

T."





Δ	Р	Р	E	Ν	D	IX	В

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 S/N_ P278 - 003 AEROJET 1331559-2 REV. _____

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. + 22.7 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

____(1)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	<u>-83.0 dB</u>	F11	(*) 130.0	MHz	-0.20 dB
F2	1.0	MHz	<u>- نن ، 5</u> dB	F12	(*) 150.0	MHz	-0.26 dB
F3	5.0	MHz	<u>-17.9</u> dB	F13	180.0	MHz	-0.44 dB
F4	7.5	MHz	- 7.52 dB	F14	190.0	MHz	-0.62 dB
F5	10.0	MHz	<u>- 1.86</u> dB	F15	200.0	MHz	-4.28 dB
F6	20.0	MHz	<u>-0.07</u> dB	F16	250.0	MHz	-47.1 dB
F7	40.0	MHz	-0.10 dB	F17	300.0	MHz	<u>-42.2</u> dB
F8	(*) 60.0	MHz	-0.16 dB	F18	400.0	MHz	-50.8 dB
F9	(*) 80.0	MHz	-0.19 dB	F19	500 .0	MHz	-60.3 dB
F10	105.0	MHz	- <u>0.76</u> dB	F20	1000.0	MHz	-71.4 dB
				4			

TEST PERFORMED BY: P 1066 DATE 12/27/96

NOTE IF TEST WITNESSED BY AESD _____ GSI __ Not witnessed this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

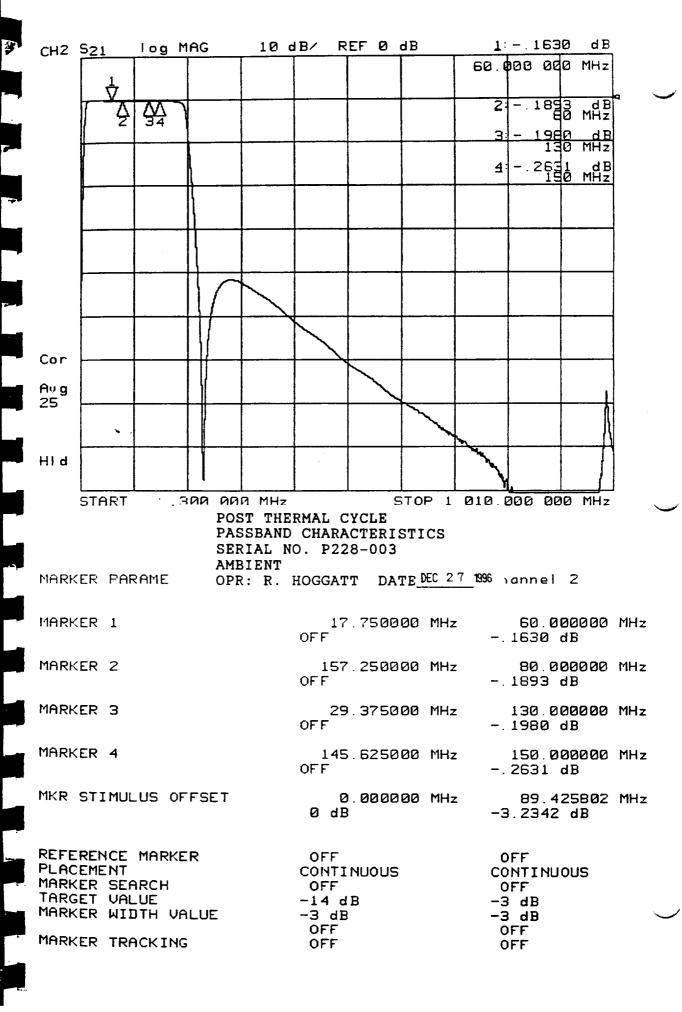
FUNCTIONAL PERFORMANCE TEST

QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX B PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER QTP PARA 4.5.1.
- b.) INSERTION LOSS PER QTP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER QTP PARA 4.5.5.

CONTRACT NO.	SIZE A	57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APBH.DOC	SHEET	11



Channel 5 Bandpass Filter

IF Filter (S/N: 1331559-5, S/N: P231-002)

APPENDIX E

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL115-170-10SS1 S/N_P231-GO2 AEROJET 1331559-5 REV. E

_	_		_					
2	n	dB		ΛР	חו	W	nт	_
J.	u	uВ	\mathbf{c}	~,	٧v	771	$\boldsymbol{\nu}$	•

QUALIFICATION TEST PROCEDURE	-10°C	+15°C	+40°C
63-0005-010 PAPA 4 5 3			

63-0005-010 PARA 4.5.3			
{7} UPPER 3.0 dB BANDEDGE	<u>199.34</u> MHz (198.0-200.0)	<u>[49.01</u> Mhz (198.0-200.0)	1 <u>98.75</u> MHz (198.0-200.0)
(8) LOWER 3.0 dB BANDEDGE	31,31 MHz (30.0-32.0)	<u>31.75</u> Mhz (30.0-32.0)	31.20MHz (30.0-32.0)
(9) 3.0 dB RELATIVE BANDWIDTH	<u>ി & 8.03</u> MHz (166.0-170.0)	Mhz (166.0-170.0)	<u>67.55</u> MHz (166.0-170.0)
{10} ADD {7} AND {8} ÷ 2 =	1 <u>15.33</u> MHz (115.0 NOM)	115.13 MHz (115.0 NOM)	l <u>(5.98</u> Mhz (115.0 NOM)
(10a) RECORD MEASURED TEMPERATURE	- <u>13.3</u> ℃ (-15.0 TO -10.0)	+ <u> ៤.८</u> °C (12.5 TO 17.5)	+ <u>47.7</u> °C (40.0 TO 45.0)

	(-15.0 10 -10.0)	(12.5 10 17.5)	(40.0 TO 45.0)
(6) ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	<u> </u>	<u> </u>	(√)

PASSBAND RIPPLE

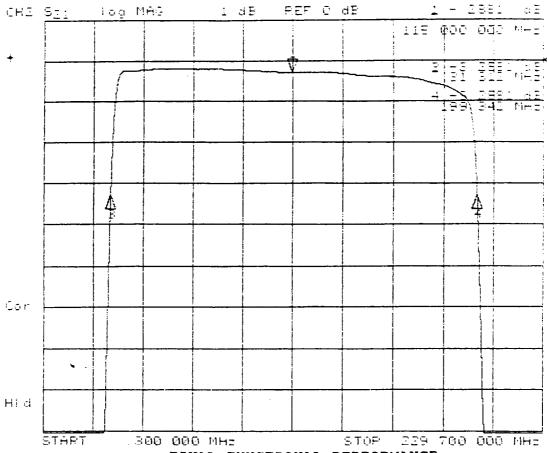
QUALIFICATION TEST PROCEDURE	-10°C	+15°C	+40°C
63-0005-010 PARA 4 5 4			

00-0000-0101 ANA 4.5.4			
{11a} MIN INSERTION LOSS FREQ	55.36MHz	57.08 Mhz	55.36MHz
MIN INSERTION LOSS PERFORMANCE	- <u>0.70</u> dB	-0.51 dB	- <u>0.22</u> dB
(11b) 75% BW LOWER BANDEDGE FREQ	35.01 _{MHz}	341.84 Mhz	34.71 MHz
75% BW LOWER BANDEDGE I.L. PERF	- <u>0.40</u> dB	- <u>0.42</u> dB	- <u>0.25</u> dB
(11c) 75% BW UPPER BANDEDGE FREQ	1 <u>62.51</u> MHz	1 <u>62.34</u> Mhz	1 <u>62.21</u> MHz
75% BW UPPER BANDEDGE I.L. PERF	- <u>0.40</u> dB	- <u>0.42</u> dB	- <u>0.25</u> dB
(11d) PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	<u>0.20</u> dB	<u>O.21</u> dB	<u>O.22</u> dB

{11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})	<u>O.2()</u> dB	0.21 dB	<u>0.23</u> dB
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Prepared	in	accordance	with	RAII	STD 100
··CDateu	11.1	accordance	wiin	MILL	->111-1111

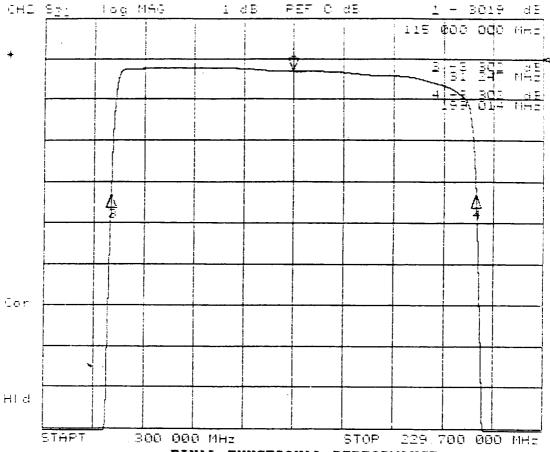
CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APEH.DOC	SHEET	13



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P231-002 -10C DATA

OPR: R. HOGGATT DATE 17 11/96

MARKER PARAME	HOGGATT DATE 17 [11]	<u>40</u> ane(2
MARKER 1	38 500000 MHz OFF	115.000000 MHz - 2881 dB
MARKER Z	191.500000 MHz OFF	115.327611 MHz OFF
MARKER 3	51.250000 MHz OFF	31 312833 MHz -3 2881 dB
MARKER 4	178.750000 MHz OFF	199 342389 MH± -3.2881 dB
MKP STIMULUS OFFSET	0.000000 MH≥ 0 dB	89.425803 MH± -3.2342 dB
PLACEMENT MARKER SEARCH	CONTINUOUS OFF -14 dB	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF

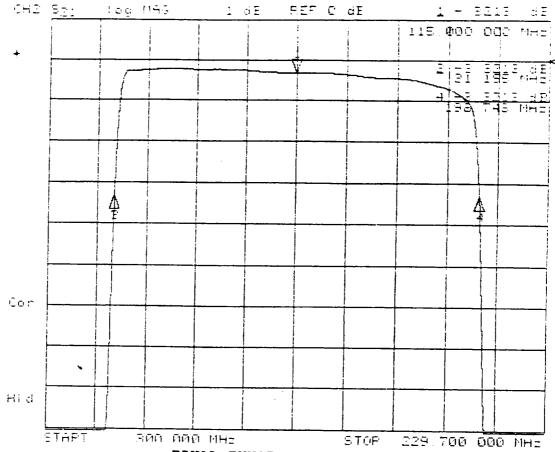


FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P231-002

+15C DATA

OPR: R. HOGGATT DATE 12 11 94 MARKER PARAME, L.L.

MARKER 1	38.500000 MHz OFF	115.000000 MHz - 3019 dB
MARKER 3	191.500000 MH± OFF	115 130748 MHz OFF
MARKER 3	51 250000 MH± OFF	31.247283 MHz -3.302 dB
MARKER 4	178 7 5000 0 MH≥ OFF	199.014214 MHz -3.302 dB
MKR STIMULUS OFFSET	0 000000 MH=	89.425802 MHz -3.2342 dB
MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF
MARKER TRACKING	OFF	OFF



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P231-002 +40C DATA

MARKER PARAME. ... OPR: R. HOGGATT DATE 17 11 44

MARKER 1	38 500000 MH≥ OFF	115.000000 MH= 3213 dB
MARKER 2	191 500000 MHz OFF	114.972154 MH± OFF
MARKER 3	51 250000 MHz OFF	31.195837 MHz -3.3213 dB
MARKER 4	178 750000 MH± OFF	198.748472 MHz -3.3213 dB
MKR STIMULUS OFFSET	0 000000 MHz	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKEP SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -14 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF

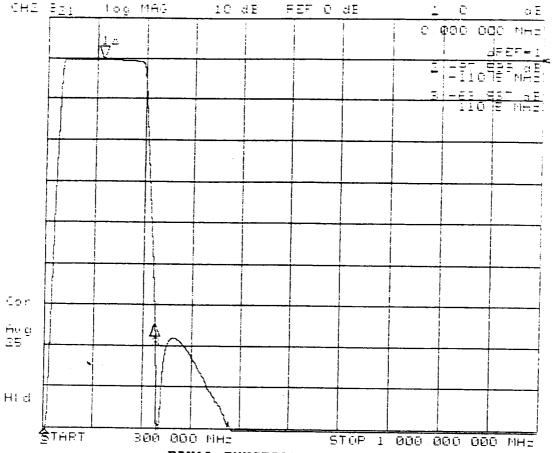
APPENDIX E	QUALIFIC	ATION TEST REI	PORT	
BANDPASS FILTER MODEL AEROJET 1331559-5 REV.	HL115-170-108	ss1 s/n <u>P231-</u>	.002	•
PASSBAND RIPPLE (CON'T)	1			<u> </u>
{11f} RECORD PASS/FAIL	(0.5 dB MAX)	PASSFAIL	PASSIFAIL	PASS/FAIL
{11g) ATTACH PASSBAND RI PERFORMANCE X-Y PLOT(S		<u> </u>	(√)	<u> </u>
OUT-OF-BAND REJECTION QUALIFICATION TEST PROC 63-0005-010 PARA 4.5.5 Fc=115.0 MHz. REF {5A} FOR INSERTION LO		-10°C	+15°C	+40°C
(12) WORST CASE REJECTION 0.300 MHz TO 4.5 MHz	ON FROM	<u>>90</u> dB (40.0 dB MIN	>90 dB (40.0 dB MIN)	<u>> 90</u> dB (40.0 dB MIN)
{13a} WORST CASE REJECTI 225.5 MHz TO 1000.0 MHz	ON FROM	- <u>63.9</u> dB (40.0 dB MIN	- <u>65.1</u> dB (40.0 dB MIN)	- <u> </u>
{13c} RECORD MEASURED T	EMPERATURE		+ <u>15.%</u> °C) (12.5 TO 17.5)	+42.5°C
{14} ATTACH REJECTION PER X-Y PLOT(S)		(\forall)	(√)	(40.0 TO 45,0)
TEST PERFORMED BY 2.			<u>-</u>	
NOTE IF TEST WITNESSED B	Y AESD:	GSI:_thi	witnessed s time. DLD	
***** END OF FUNCTIONAL PE	ERFORMANCE	TEST ****		
OUTLINE AND MOUNTING DII {16} REFERENCE CUSTOMER	MENSIONS VE DRAWING 13	RIFICATION 31559		
DESCRIPTION OF MEASUREMENT		DIMENS TOLERA	SION AND ACTUAL	MENT
OVER ALL LENGTH		3.50 ± .0	03 3.490	1
MOUNTING HOLE CENTER		0.125 <u>+</u> .	010 0.125)
BETWEEN UPPER MOUNTING	HOLES	3.250	3.25	1
BETWEEN LOWER MOUNTING	HOLES	3.250	3.25	1
Prepared in accordance with MIL-STD-100				
CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES	INC			

FILE: ACAD/63/0510APEH.DOC

DADEN-ANTHONY ASSOCIATES INC.

14

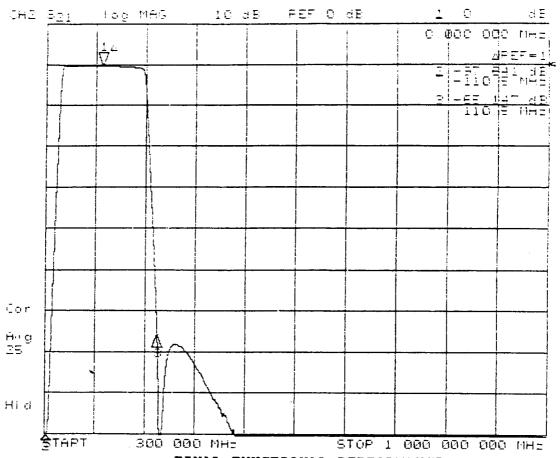
SHEET



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P231-002 -10C DATA

MARKER PARAME. OPR: R. HOGGATT DATEIZINGL

MARKER 1	1000.000000 MH= OFF	115.000000 MHz 0 dB
MARKER Z	1000 000000 MHz OFF	4.500000 MHz -97.599 dB
MARKER 3	1000 000000 MHz OFF	225.500000 MHz -63.937 dB
MARKER 4	1000.800000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
PLACEMENT MARKER SEARCH	OFF CONTINUOUS OFF -3 dB -3 dB OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF OFF
		∵ 1 1



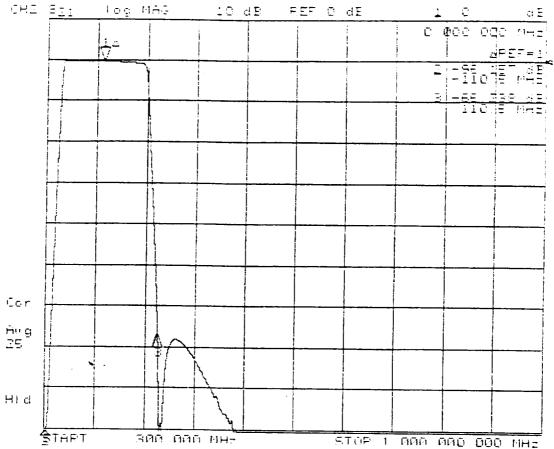
FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P231-002

+15C DATA

MARKER PARAMETLIC

OPR: R. HOGGATT DATE 12/11/46

MARKER 1	1000 000000 NHz OFF	115.000000 MH≥ 0 dB
MARKER 2	1000 000000 MHz OFF	4.500000 MHz -97.641 dB
MARKER 3	1000 000000 MH≥ OFF	235.500000 MH≥ -65.147 dB
MARKER 4	1000.000000 MH≥ OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0 000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF OFF



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P231-002 +40C DATA

MAPILES PAPAME . . . OPR: R. HOGGATT DATE 12 1196

		channe) _
MARKER 1	1000.000000 MHz OFF	115.000000 MHz 0 dB
MARKER 2	1000 000000 MHz OFF	4 500000 MHz -96 157 dB
MARKER 3	1000 000000 MHz OFF	225.500000 MHz -66.238 dB
MARKER 4	1000.000000 MH≥ OFF	1000.000000 MH= OFF
NKR STIMULUS OFFSET	0.000000 NH± 3b 0	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF
MARKER TRACKING	OFF	OFF

APPENDIX E

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL_HL115-170-10SS1 S/N PZ3 1-GGZ AEROJET 1331559-5 REV. ヒ

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE.+23.3 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

 \checkmark (\lor)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-103.4 dB	F11	(*) 130.0	MHz	-0.31 dB
F2	1.0	MHz	-102.2dB	F12	(*) 155.0	MHz	- 0.46 dB
F3	10.0	MHz	-78.2 dB	F13	180.0	MHz	-0.65 dB
F4	20.0	MHz	<u>- 38.4</u> dB	F14	190.0	MHz	- 0.84 dB
F5	30.0	MHz	<u>- 6.30</u> dB	F15	200.0	MHz	- 4.85 dB
F6	40.0	MHz	-0.26 dB	F16	210.0	MHz	-26.8 dB
F7	50.0	MHz	-0.22 dB	F17	300.0	MHz	- 72.8 dB
F8	(*) 75.0	MHz	-0.24 dB	F18	400.0	MHz	- 95.5 dB
F9	(*) 100.0	MHz	<u>- 0.29 dB</u>	F19	500.0	MHz	-105.8 dB
F10	115.0	MHz	<u>- C.32 dB</u>	F20	1000.0	MHz	-101.6dB

TEST PERFORMED BY: R. HOGGATT 5 DATE 12/11/96

NOTE IF TEST WITNESSED BY AESD_____GSI_ this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

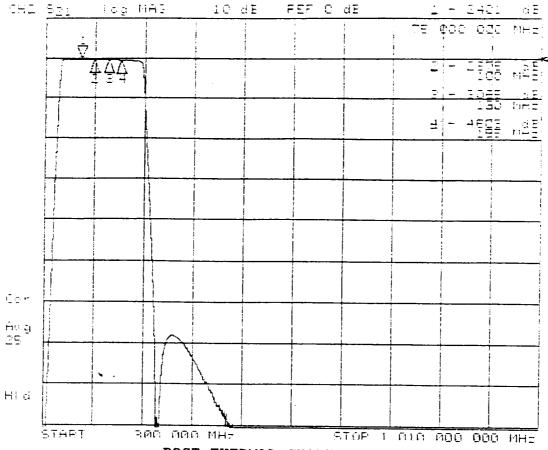
FUNCTIONAL PERFORMANCE TEST

QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX E PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER QTP PARA 4.5.1.
- b.) INSERTION LOSS PER QTP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER QTP PARA 4.5.5.

Prepared in accordance with MIL-STD-100				
CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APEH.DOC	SHEET	11



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P231-002

AMBIENT

		AMBIENT			1 1	
		OPR:	R.	HOGGATT	DATE 12 11 46	
MARKER	- PARAME (L).L	,		(a) Furnited		

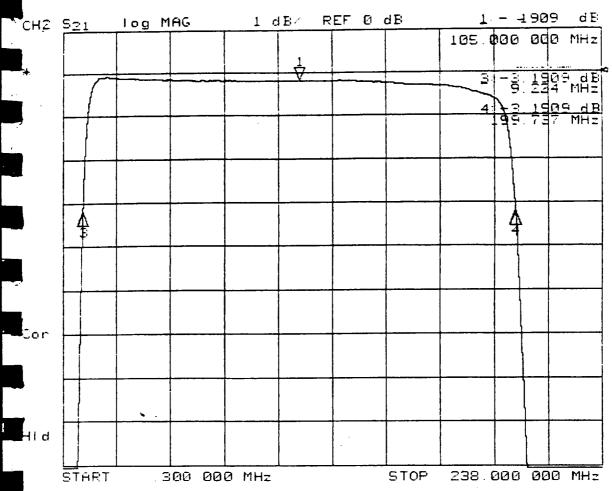
75 000000 MHz	75.000000 MHz
OFF	2401 dB
100.000000 MH=	100.000000 MH≥
OFF	2875 dB
130 000000 MHz	130.000000 MHz
OFF	3065 dB
155.000000 MHz	155.000000 MH≥
OFF	4603 dB
0.000000 MHz	0.000000 MHz
0 dB	0 dB
CONTINUOUS OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF
	100.000000 MHz 0FF 130.000000 MHz 0FF 155.000000 MHz 0FF 0.000000 MHz 0 dB OFF CONTINUOUS OFF -3 dB +3 dB OFF

Channel 6 Bandpass Filter

IF Filter (S/N: 1331559-2, S/N: P228-014)

 APPENDIX B ACCEPTAN	CE TEST REPOR	I	
BANDPASS FILTER MODEL HL105-190-10SS AEROJET 1331559-2 REV.	61 S/N <u>P228</u> -(514	
3.0 dB BANDWIDTH ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.5.3	-10°C	+15°C	+40°C
{7} UPPER 3.0 dB BANDEDGE	1 <u>99,77 </u> MHz (198.0-200.0)	199.42 Mhz (198.0-200.0)	1 <u>99.05</u> MHz (1480.01500.0)
{8} LOWER 3.0 dB BANDEDGE	<u>9.22</u> MHz (8.0-10.0)	<u>9.21</u> Mhz (8.0-10.0)	<u>9.20</u> MHz (8.0-10.0)
{9} 3.0 dB RELATIVE BANDWIDTH	<u>90.55</u> MHz (188.0-192.0)	1 <u>90.21</u> Mhz (188.0-192.0)	<u>89.85</u> MHz (188.0-192.0)
{10} ADD {7} AND {8} ÷ 2 =	1 <u>04.49</u> MHz (105.0 NOM)	1 <u>04.32</u> MHz (105.0 NOM)	1 <u>04./3</u> Mhz (105.0 NOM)
{10a} RECORD MEASURED TEMPERATURE	- <u> . %</u> °C (-15.0 TO -10.0)		+ <u>43.</u> % °C (40.0 TO 45.0)
(6) ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	<u> </u>	(\forall)	<u>/</u> (√)
PASSBAND RIPPLE ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.5.4	-10°C	+15°C	+40°C
{11a} MIN INSERTION LOSS FREQ	19.91 MHz	19.41 Mhz	19.32 MHz
MIN INSERTION LOSS PERFORMANC	E - <u>(),()8</u> dB	- <u>0.08</u> dB	- <u>0,08</u> dB
{11b} 75% BW LOWER BANDEDGE FREQ	1 <u>3.87</u> MHz	(<u>3.85_</u> Mhz	13.73 MHz
75% BW LOWER BANDEDGE I.L. PERF	- <u>0.28</u> dB	- <u>0.29</u> dB	- <u>0.30</u> dB
{11c} 75% BW UPPER BANDEDGE FREQ	1 <u>56.37</u> MHz	15 <u>6.35</u> Mhz	156.23 MHz
75% BW UPPER BANDEDGE I.L. PERF	- <u>0.28</u> dB	- <u>0.29</u> dB	- <u>0.30</u> dB
{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	<u>0.20</u> dB	<u>0.21</u> dB	<u>0.22</u> dB
{11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})	<u>0.20</u> dB	0.21 dB	<u>0.22</u> dB

repared in accordance with MIL-STD-100				
CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APBJ.DOC	SHEET	13

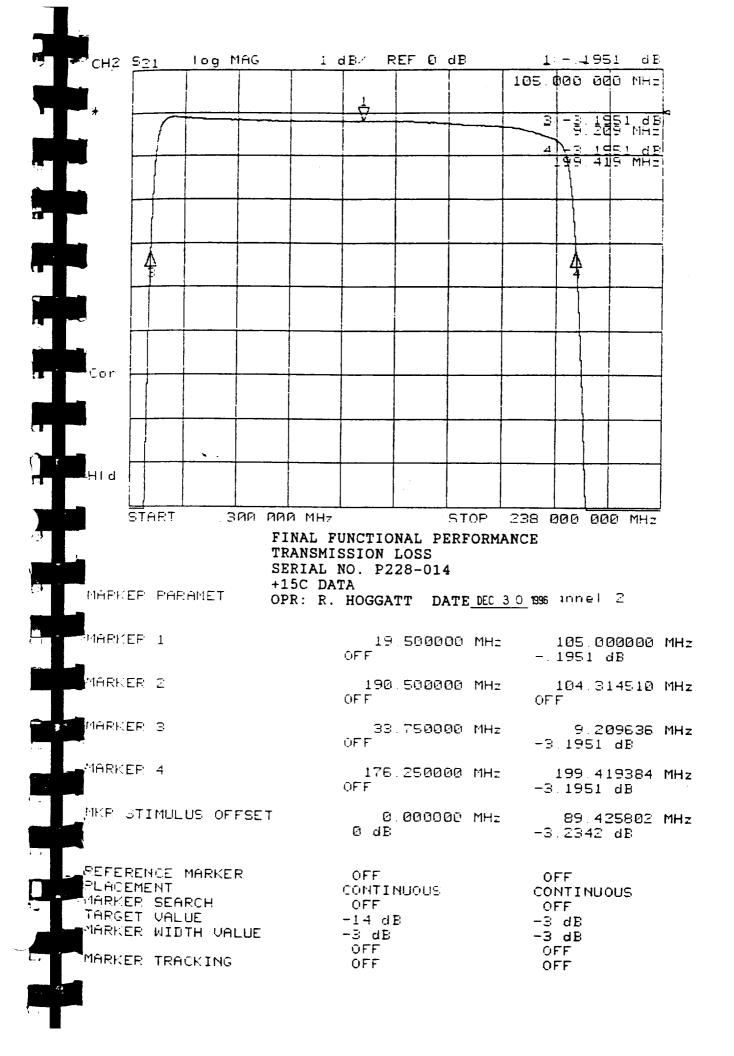


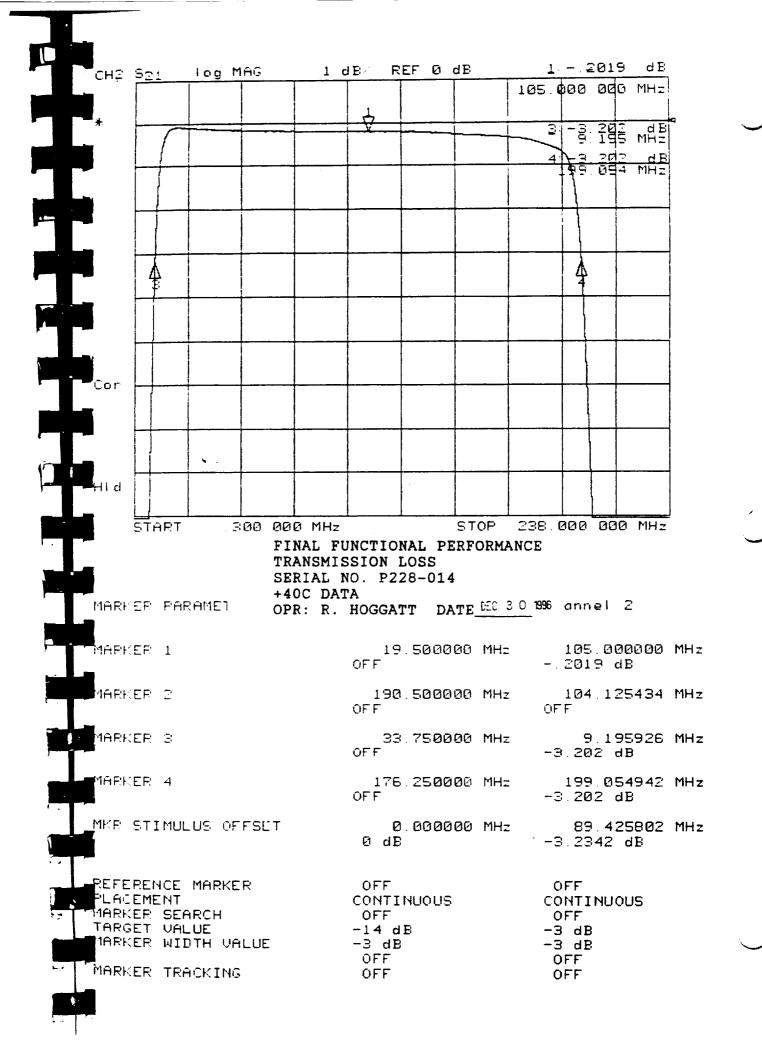
FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P228-014

-10C DATA

MARKER PARAME OPR: R. HOGGATT DATEDEC 3 0 1996 annel 2

MARKER 1	19.500000 MHz OFF	105.000000 MHz 1909 dB
MARKER 2	190.500000 MHz OFF	104 480829 MHz OFF
MARKER 3	33.750000 MHz OFF	9.224099 MHz -3.1909 dB
MARKER 4	176.250000 MHz OFF	199.737559 MHz -3.1909 dB
MKR STIMULUS OFFSET	0 000000 MHz 0 dB	89.425802 MHz ~3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF
MARKER TRACKING	OFF	OFF





APPENDIX B

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 S/N PZZ8-014 AEROJET 1331559-2 REV._____

PASSBAND RIPPLE (CON'T)

-10°C

(11g) ATTACH PASSBAND RIPPLE

PERFORMANCE X-Y PLOT(S)

OUT-OF-BAND REJECTION

ACCEPTANCE TEST PROCEDURE

63-0005-02 PARA 4.5.5

Fc=105.0 MHz.

REF (5A) FOR INSERTION LOSS @ Fc

{12} WORST CASE REJECTION FROM 0.300 MHz TO 1.0 MHz

- 59.3 dB (40.0 dB MIN)

-<u>59.4</u>dB

+15°C

-<u>59.3</u> dB (40.0 dB MIN) (40.0 dB MIN)

+40°C

{13a} WORST CASE REJECTION FROM 228.5 MHz TO 1000.0 MHz

-42.8 dB (40.0 dB MIN)

-42.8 dB

-42.8 dB (40.0 dB MIN) (40.0 dB MIN)

{13c} RECORD MEASURED TEMPERATURE

-11.8 °C

+14.5 00

-<u>11.8</u> °C +<u>14.5</u> °C +<u>44.6</u> °C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0)

{14} ATTACH REJECTION PERFORMANCE

X-Y PLOT(S)

TEST PERFORMED BY 16. HOGGOTT

DATE 12/30/96

NOTE IF TEST WITNESSED BY AESD: _____ GSI: _ this time. DLD

Not witnessed

***** END OF FUNCTIONAL PERFORMANCE TEST ****

OUTLINE AND MOUNTING DIMENSIONS VERIFICATION

{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT

DIMENSION AND TOLERANCE

ACTUAL MEASUREMENT

OVER ALL LENGTH

 $3.50 \pm .03$

3.500

MOUNTING HOLE CENTER

0.125 <u>+</u> .010

0.126

BETWEEN UPPER MOUNTING HOLES

3.250

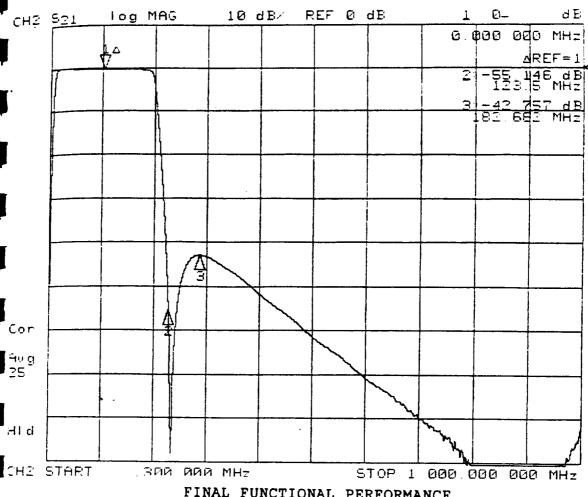
BETWEEN LOWER MOUNTING HOLES

3.250

3.250

pared in accordance with MIL-STD-100

ONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE AC	AD/63/0502APBJ.DOC	SHEET	14



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P228-014

-10C DATA MARKER PARAMET

MARKER WIDTH VALUE

MARKER TRACKING

OPR: R. HOGGATT DATE III 3 0 1996 annel 2

-3 dB

-3 dB

OFF

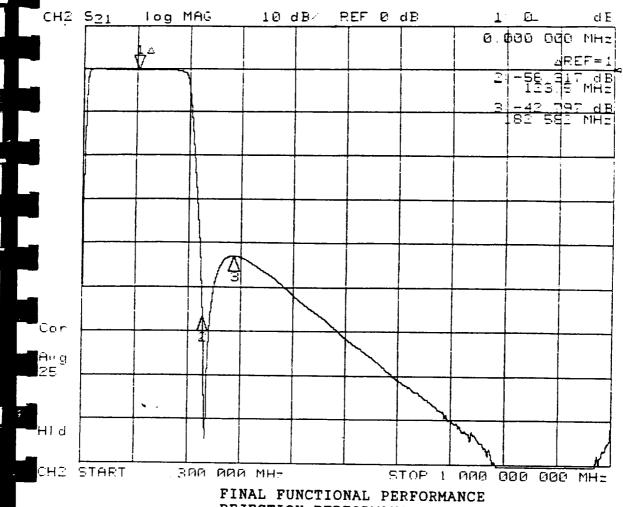
OFF

		_
MARKER 1	1.000000 MH≥ OFF	105.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	228.500000 MHz -55.146 dB
MARKER 3	5.000000 MHz Off	287.682242 MHz -42.757 dB
MARKER 4	5.000000 MHz OFF	.300000 MHz OFF
MKP STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz G dB
REFERENCE MARKER L'ACEMENT MARKER SEARCH TARGET VALUE	OFF CONTINUOUS OFF -3 dB	MARKER 1 CONTINUOUS OFF -3 dB

-3 dB

OFF

OFF



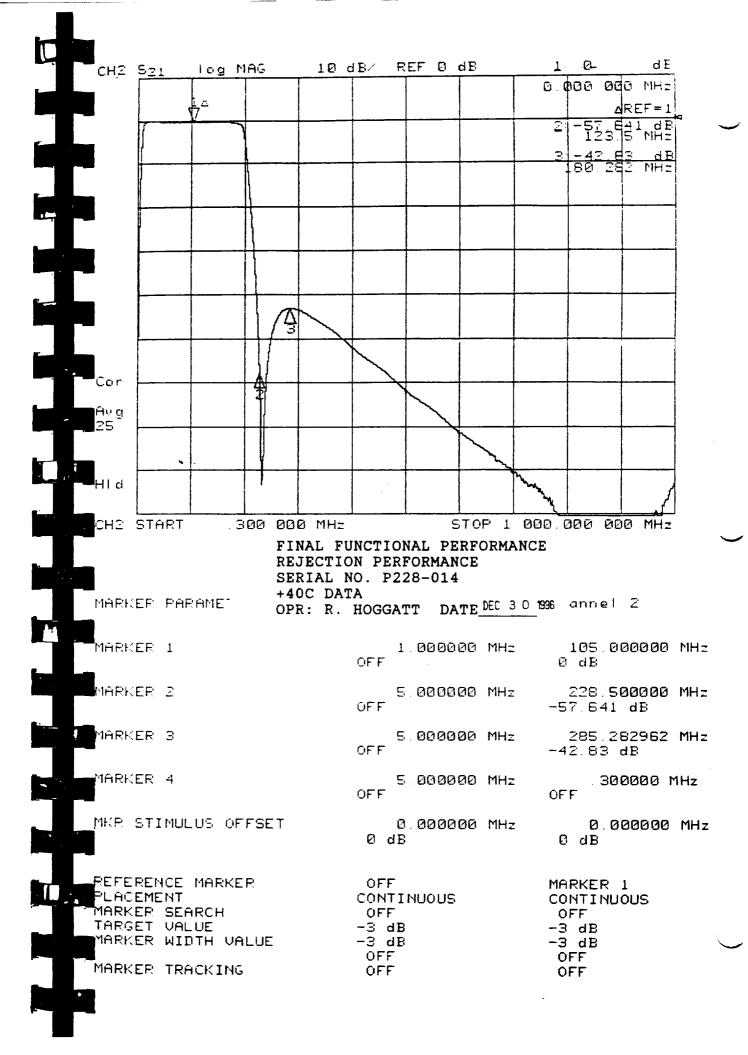
FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P228-014

+15C DATA

MARKER PARAMET

OPR: R. HOGGATT DATE DEC 3 0 1996 annel 2

	OPR: R. HOGGATT DATE	o mar inner i
MARKER 1	1.000000 MHz OFF	105.000000 MH≥ 0 dB
MARKER 2	5.000000 MHz OFF	228. 500000 MH≥ -56.317 dB
MARKER 3	5 000000 MHz OFF	287.582272 MH± -42.797 dB
MARKER 4	5 000000 MHz GFF	.300000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB	MARKEP 1 CONTINUOUS OFF -3 dB -3 dB
MARKER TRACKING	OFF OFF	OFF OFF



APPENDIX B

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 SIN PZZS -OIH AEROJET 1331559-2 REV. _ F

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +22.9 °C (+19°C TO +29.0°C)

(15) ATTACH PASSBAND PERFORMANCE X-Y PLOT

(V)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-84.1 dB	F11	(*) 130.0	A A I-I-	
F2	1.0	MHz	-67.0 dB	F12		MHz	-0.19 dB
F3	5.0				(*) 150.0	MHz	-0.29 dB
		MHz	<u>-17.9</u> dB	F13	180.0	MHz	- 0.45 dB
F4	7.5	MHz	<u>- 7.5</u> 2 dB	F14	190.0	MHz	
F5	10.0	MHz	-1.87 dB				<u> ひにち</u> dB
F6	-			F15	200.0	MHz	<u>-3.81 dB</u>
	20.0	MHz	<u>-८.८६</u> dB	F16	250.0	MHz	-50.0 dB
F7	40.0	MHz	<u>-0.11 dB</u>	F17	300.0	MHz	
F8	(*) 60.0	MHz	-0.17 dB				<u>-43.3</u> dB
F9	` '			F18	400.0	MHz	-51.5 dB
	(*) 80.0	MHz	- <u>0.20</u> dB/	F19	500.0	MHz	- اله dB
F10	105.0	MHz	-0.20 dB (DA)	F20			
				F20	1000.0	MHz	<u>-83.4</u> dB
TEST	PERFORM	ED BY:	R HOGGATT	DATE	12/20/01		

TEST PERFORMED BY: K 10664T DATE 12/27/96 NOTE IF TEST WITNESSED BY AESD_____ GSI__ this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

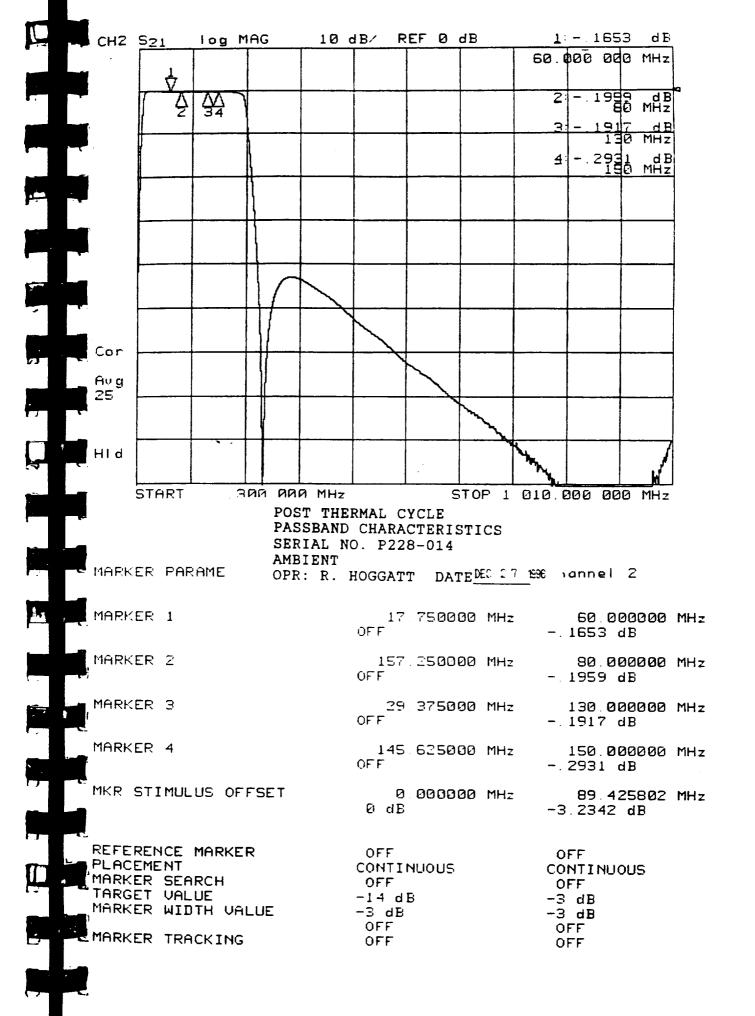
ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX B PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

ared in accordance with MIL-STD-100

NTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APBJ.DOC	SHEET	11



Channel 7 Bandpass Filter

IF Filter (S/N: 1331559-2, S/N: P228-015)

APPENDIX B

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 S/N_P228-GIS AEROJET 1331559-2 REV._____

3.0 dB BANDWIDTH	Н
------------------	---

ACCEPTANCE TEST PROCEDURE	-10°C	+15°C	
63-0005-02 PARA 4.5.3			

{7} UPPER 3.0 dB BANDEDGE	199.77 MHz	199.46 Mhz	199,12MHz
	(198.0-200.0)	(198.0-200.0)	(1480.01500.0)

+40°C

{10} ADD {7} AND {8} ÷ 2 =
$$\frac{104.51 \text{ MHz}}{(105.0 \text{ NOM})}$$
 $\frac{104.34 \text{ MHz}}{(105.0 \text{ NOM})}$ $\frac{104.17 \text{ Mhz}}{(105.0 \text{ NOM})}$

{10a} RECORD MEASURED TEMPERATURE	- <u>11.7</u> °C	+ <u>14.5</u> °C	+ <u>44.0</u> °C
	(-15.0 TO -10.0)	(12.5 TO 17.5)	(40.0 TO 45.0)

(6) ATTACH TRANSMISSION LOSS	<u> </u>	<u> </u>	<u>/</u> (1)
PERFORMANCE X-V PLOT			

PASSBAND RIPPLE

ACCEPTANCE TEST PROCEDURE	-10°C	+15°C	+40°C
63-0005-02 PARA 4 5 4			

{11a} MIN INSERTION LOSS FREQ 19.91 M	MHz <u>20.50</u> Mhz <u>19.91</u> MHz
---------------------------------------	---------------------------------------

MIN INSERTION LOSS PERFORMANCE	<u>- 0.08</u> dB	<u>- O.08</u> dB	- <u>0.08</u> dB
--------------------------------	------------------	------------------	------------------

{11b} 75% BW LOWER BANDEDGE FREQ	14.15 MHz	14.06 Mhz	13.96 MHz
----------------------------------	-----------	-----------	-----------

75% BW LOWER BANDEDGE I.L.	PERF - 0.27 dB	- <u>0.28</u> dB	- <u>0.29</u> dB
----------------------------	----------------	------------------	------------------

{11c} 75% BW UPPER BANDEDGE FREQ \\\ \frac{56.65}{6.65} MHz \\\ \lambda	15 <u>6.56</u> Mhz	15 <u>6.46</u> MHz
---	--------------------	--------------------

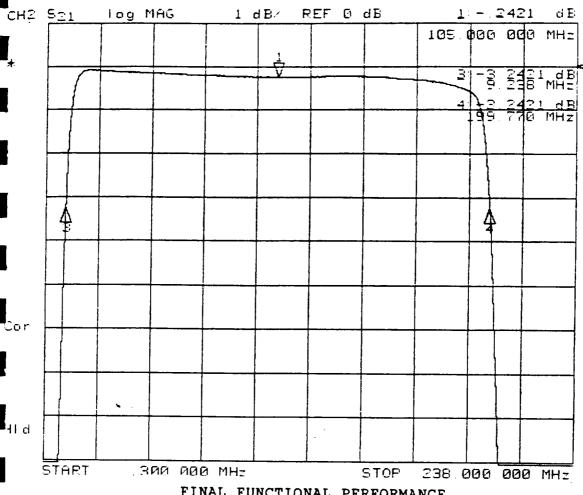
75% BW UPPER BANDEDGE I.L. PERF	-0.27 dB	- <u>0.2%</u> dB	- <u>0.29</u> dB
---------------------------------	----------	------------------	------------------

{11d} PERFORMANCE DELTA	0.19 dB	0.70 dB	0.21 dB
(I.L. @ {11b} - I.L. @ {11a})	-		

{11e} PERFORMANCE DELTA	0.19 dB	0.20 dB	<u>0.21</u> dB

Prepared in accordance with MIL-STO-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: ACAD/63/0502APBJ.DOC		SHEET	13

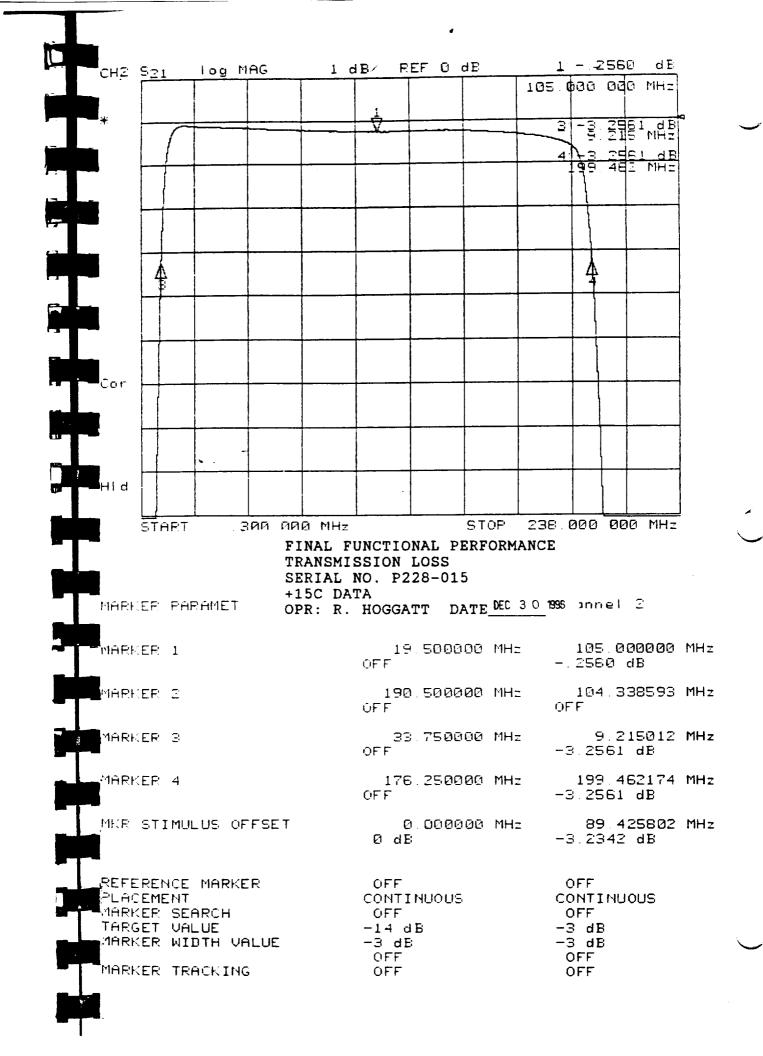


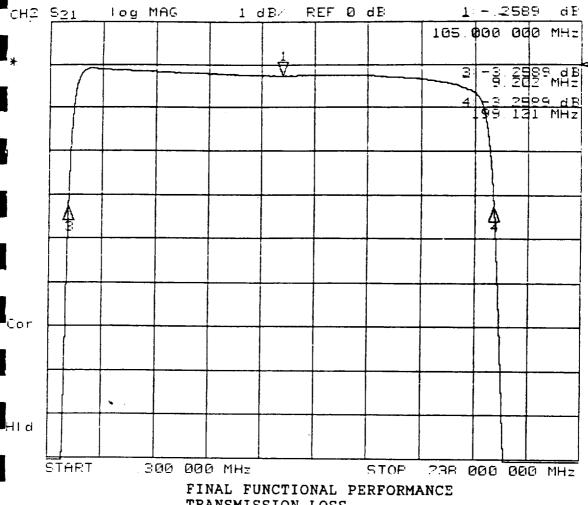
FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P228-015

-10C DATA

MARKER PARAMET OPR: R. HOGGATT DATE MC 3 0 1996 annel 2

MARKER 1	19.500000 MHz OFF	105.000000 MHz 2421 dB
1ARKER 2	190.500000 MHz OFF	104.504578 MHz OFF
MARKER 3	33.750000 MHz OFF	9.238843 MHz -3.2421 dB
HARKER 4	176.250000 MHz OFF	199.770313 MHz -3.2421 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 db	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT HARKER SEARCH TARGET VALUE HARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF
MARKER TRACKING	OFF	OFF



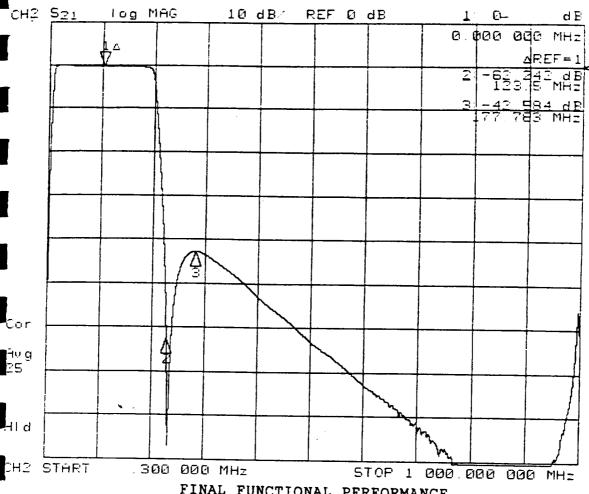


TRANSMISSION LOSS SERIAL NO. P228-015

MARKER PARAMET	+40C DATA OPR: R. HOGGATT DATE DEC 3 C	2 1996 annel 2
MARKER 1	19.500000 MHz OFF	105.000000 MHz 2589 dB
MARKER 2	190.500000 MHz OFF	104.162185 MHz OFF
MARKER 3	33.750000 MHz OFF	9.202529 MHz -3.2589 dB
MARKER 4	176.250000 MHz OFF	199.121842 MHz -3.2589 dB
MKR STIMULUS OFFSE	T 0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -14 dB -3 dB OFF OFF	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF

APPENDIX B **ACCEPTANCE TEST REPORT** BANDPASS FILTER MODEL HL105-190-10SS1 S/N /228-015 AEROJET 1331559-2 REV. 1 PASSBAND RIPPLE (CON'T) {11f} RECORD PASS/FAIL (0.5 dB MAX) PASS)FAIL (PASS)FAIL (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** ACCEPTANCE TEST PROCEDURE -10°C +15°C +40°C 63-0005-02 PARA 4.5.5 Fc=105.0 MHz. REF (5A) FOR INSERTION LOSS @ Fc {12} WORST CASE REJECTION FROM -59.4 dB -59.3 dB -59.3 dB0.300 MHz TO 1.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13a} WORST CASE REJECTION FROM -42.6 dB -42.6 dB -42.7 dB 228.5 MHz TO 1000.0 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13c} RECORD MEASURED TEMPERATURE °C ما ۱۱۰۰ +14.4 °C +44.0°C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) {14} ATTACH REJECTION PERFORMANCE X-Y PLOT(S) TEST PERFORMED BY 12 1-1066AT DATE 12/30/40 Not witnessed NOTE IF TEST WITNESSED BY AESD: _____ GSI: _ this time. DLD ***** END OF FUNCTIONAL PERFORMANCE TEST **** **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION** {16} REFERENCE CUSTOMER DRAWING 1331559 **DESCRIPTION OF** DIMENSION AND ACTUAL **MEASUREMENT** TOLERANCE **MEASUREMENT OVER ALL LENGTH** $3.50 \pm .03$ 3.500 MOUNTING HOLE CENTER $0.125 \pm .010$ 0.126 BETWEEN UPPER MOUNTING HOLES 3.250 3.250 BETWEEN LOWER MOUNTING HOLES 3.250 3.250 Prepared in accordance with Mil -STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE ACAD/63/0502APBJ.DOC		SHEET	14

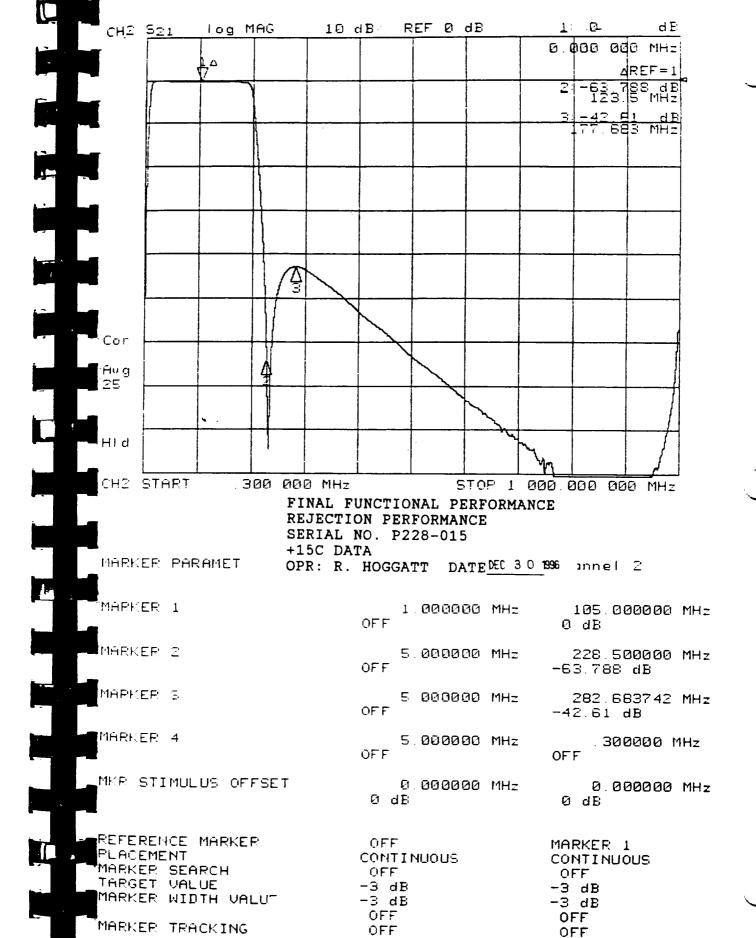


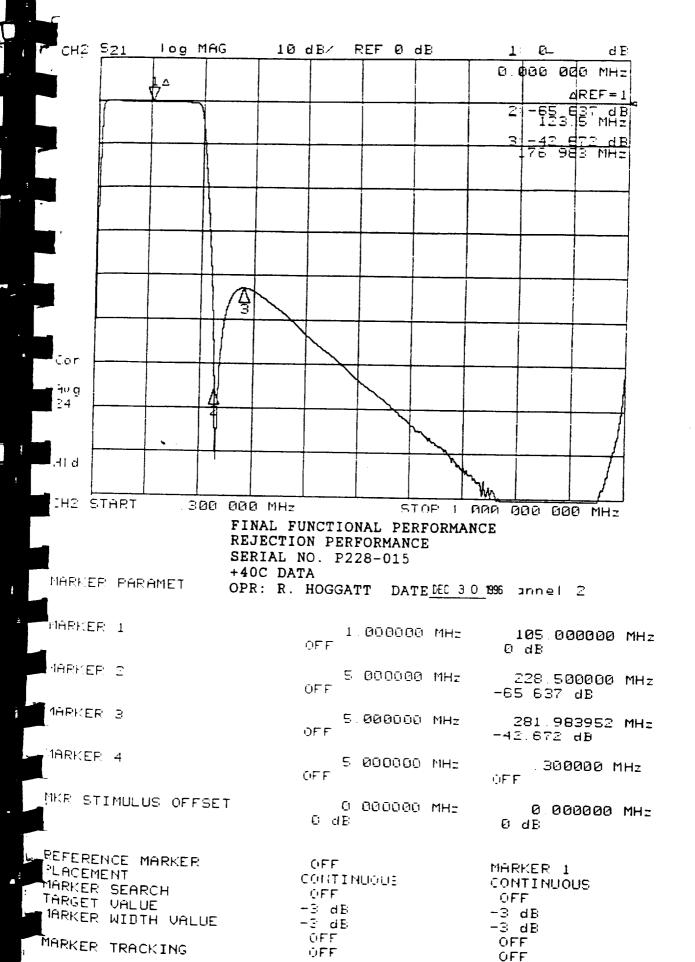
FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P228-015

-10C DATA

MARKER PARAMET OPR: R. HOGGATT DATE DEC 3 0 1996 annel 2

MARKER 1	1.000000 MH ₂ OFF	105.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	228 500000 MHz -62.342 dB
1ARKER 3	5.000000 MHz OFF	282.783712 MHz -42.584 dB
1ARKER 4	5.000000 MHz OFF	300000 MHz OFF
MKE STIMULUS OFFSET	0.000000 MH≥ 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING	OFF CONTINUOUS OFF -3 dB -3 dB OFF OFF	MARKER 1 CONTINUOUS OFF -3 dB -3 dB OFF OFF





APPENDIX B

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL105-190-10SS1 S/N P225 -OIS AEROJET 1331559-2 REV. To

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. + 22.7 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE		REF	FREQ	UNIT	VALUE
F1	0.5	MHz	<u>~ §3.3 </u> dB	_	F11	(*) 130.0	MHz	-0.24 dB
F2	1.0	MHz	<u>-66.6</u> dB		F12	(*) 150.0	MHz	-0.26 dB
F3	5.0	MHz	<u>- 17.9 dB</u>		F13	180.0	MHz	-CHZ dB
F4	7.5	MHz	<u>-7.59</u> dB		F14	190.0	MHz	- 0.60 dB
F5	10.0	MHz	<u>-1.92</u> dB		F15	200.0	MHz	-3.85 dB
F6	20.0	MHz	<u>-0.08</u> dB		F16	250.0	MHz	-48.0 dB
F7	40.0	MĄz	<u>-0.10 dB</u>		F17	300.0	MHz	-43.6 dB
F8	(*) 60.0	MHz	-0.17 dB		F18	400.0	MHz	-53.1 dB
F9	(*) 80.0	MHz	<u>-0.23</u> dB	_	F19	500.0	MHz	-63.3 dB
F10	105.0	MHz	-0.75 dB	(A)	F20	1000.0	MHz	- <u>55.6</u> dB

TEST PERFORMED BY: 12 HOGGAIL DATE 12/27/96

NOTE IF TEST WITNESSED BY AESD______GSI__ Not witnessed this time. DLD

***** END OF BANDPASS CHARACTERISTICS TEST *****

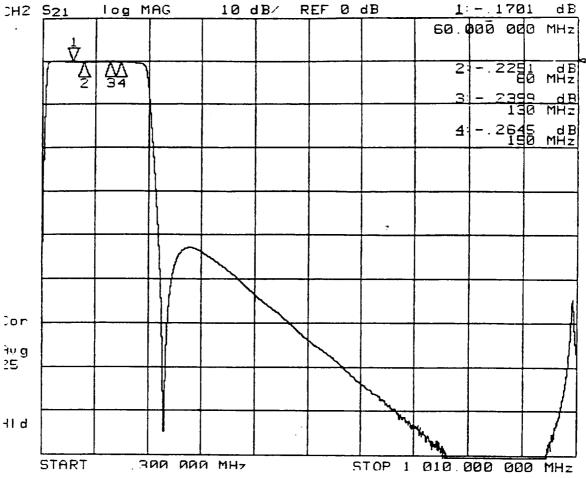
FUNCTIONAL PERFORMANCE TEST

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX B PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

Prepared in accordance with MIL-STD-100				
CONTRACT NO.	SIZE	CAGE CODE	DWG. NO.	REV.
	Α	57032	63-0005-02	J
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APBJ.DOC	SHEET	11



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P228-015

AMBIENT

MARKER PARAME

MARKER TRACKING

OPR: R. HOGGATT DATE DEC 27 1996 annel 2

OFF

OFF

1ARKER 1	17 750000 MHz OFF	60.000000 MHz - 1701 dB
MARKER 2	157.250000 MHz OFF	80.000000 MHz 2251 dB
MARKER 3	29.375000 MHz OFF	130.000000 MHz - 2399 dB
MARKER 4	145.625000 MHz OFF	150.000000 MHz 2645 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 db	89.425802 MHz -3.2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -14 dB -3 dB	OFF CONTINUOUS OFF -3 dB -3 dB

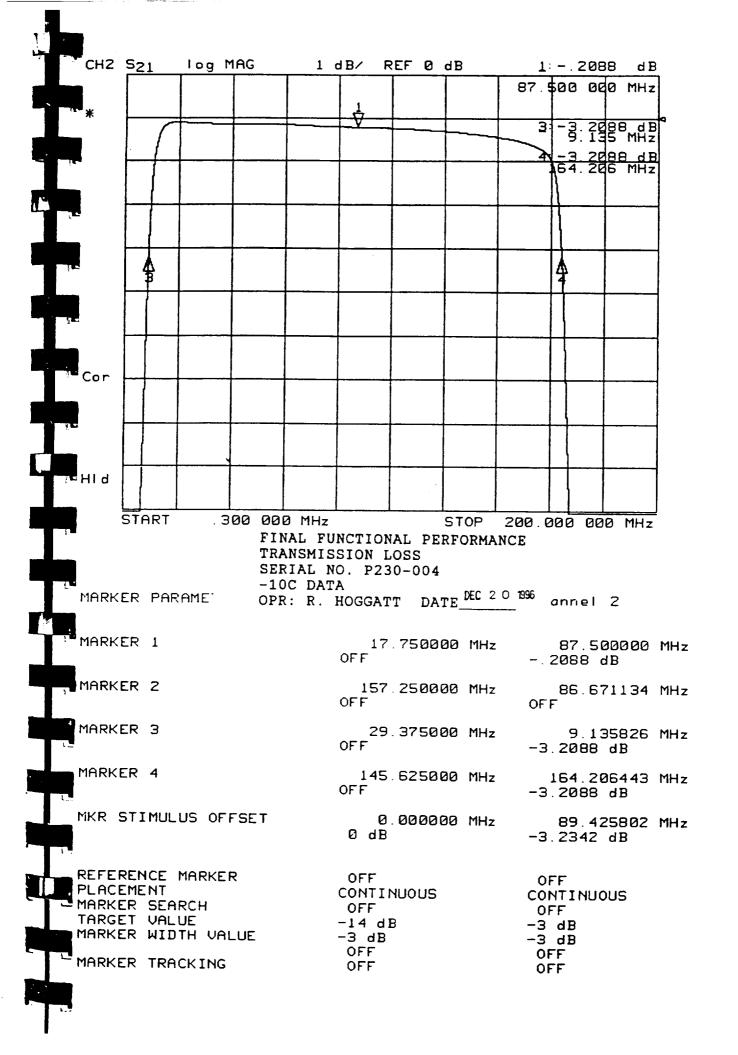
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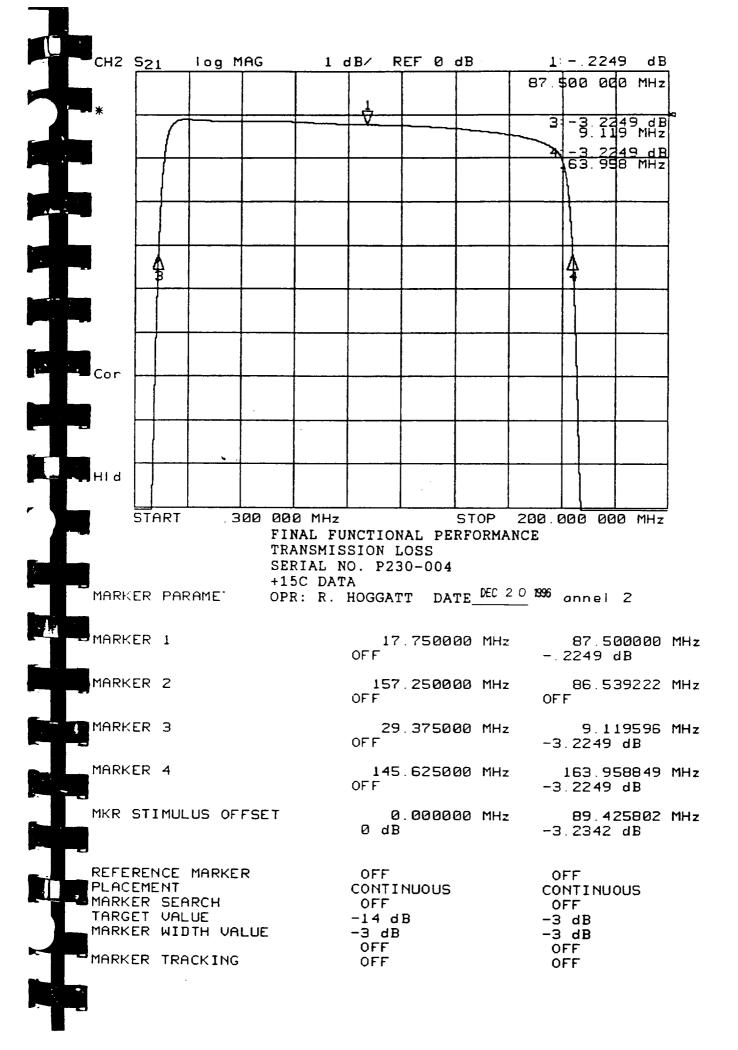
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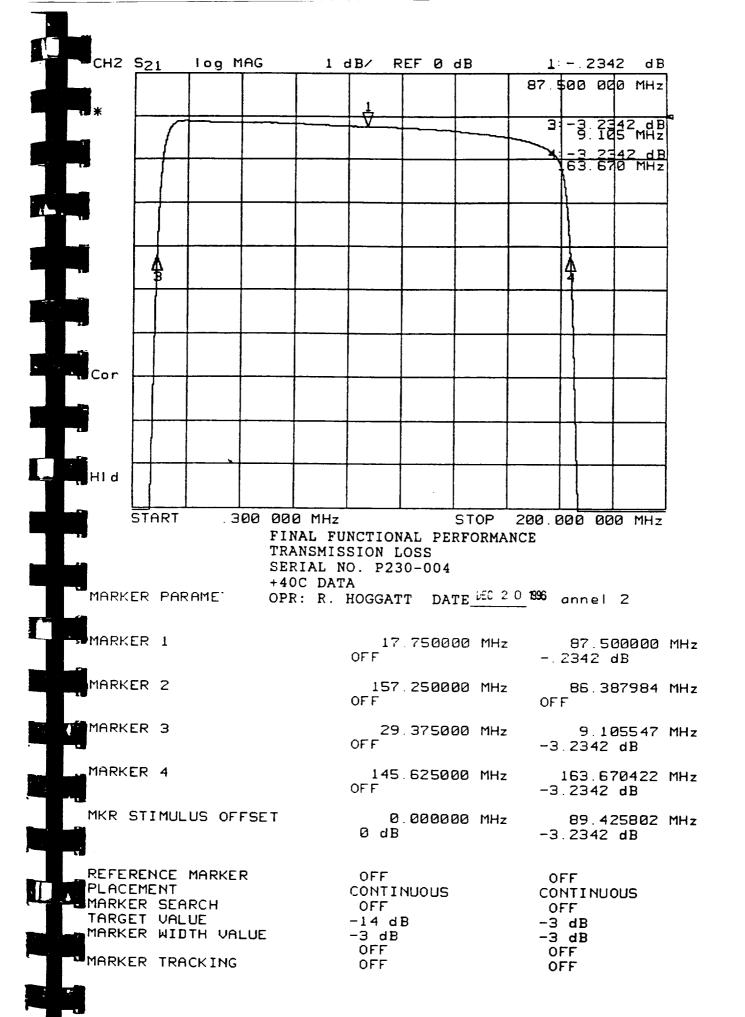
Channel 8 Bandpass Filter

IF Filter (S/N: 1331559-4, S/N: P230-004)

APPENDIX D	QUALIFIC	CATION TEST REP	ORT	
BANDPASS FILTER AEROJET 1351859	R MODEL HL87.5-155-10	0881 S/N <u>P230</u> -	004	
3.0 dB BAND WIDT QUALIFICATION TO 63-0005-010 PARA	EST PROCEDURE	-10°C	+15°C	+40°C
(7) UPPER 3.0 43 E	BANDEDGE	1 <u>64.21</u> MHz (163.0-165.0)	1 <u>63.96</u> Mhz (163.0-165.0)	<u>に3.67</u> MHz (163.0-165.0)
(8) LOWER 3 0 aB 1	BANDEDGE	(8.0-10.0) MHz	9.12 Mhz (8.0-10.0)	9.11 MHz (8.0-10.0)
(9) 3.0 dB RELATIV	E BANDWIDTH	1 <u>55.07</u> MHz (153.0-157.0)	1 <u>54.84 </u> Mhz (153.0-157.0)	1 <u>54.5G</u> MHz (153.0-157.0)
{10} ADD {7} AND {	[8] ÷ 2 =	<u>%6.6%</u> MHz (87.5 NOM)	<u>%6.54 </u> MHz (87.5 NOM)	<u> 86.39 M</u> hz (87.5 NOM)
{10a} RECORD MEA	ASURED TEMPERATUR		+ <u>13.4</u> °C (12.5 TO 17.5)	+ <u>47.9</u> °C (40.0 TO 45.0)
(6) ATTACH TRANS PERFORMANCE X-		(√)	<u>(</u> \(\forall)	<u>/</u> (\(\forall \)
PASSBAND RIPPLI QUALIFICATION TE 63-0005-010 PARA	ST PROCEDURE	-10°C	+15°C	+40°C
{11a} MIN INSERTE	ON LOSS FREQ	19.27 MHz	19.27 Mhz	14.27 MHz
MIN INSERTI	ON LOSS PERFORMAN	ICE - <u>0.10</u> dB	- <u>0.10</u> dB	- <u>(),(()</u> dB
{11b} 75% BW LOW	VER BANDEDGE FREQ	13.14 MHz	13.03 Mhz	17.92 MHz
75% BW LOV	VER BANDEDGE I.L. PE	RF - <u>035</u> dB	- <u>0.38</u> dB	<u>-040</u> дв
{11c} 75% BW UPP	ER BANDEDGE FREQ	1 <u>29,39</u> MHz	1 <u>29,28</u> Mhz	[2 <u>9.17</u> MHz
75% BW UPF	PER BANDEDGE I.L. PEI	RF <u>-0.35</u> dB	- <u>0.3%</u> dB	- <u>О.4О_</u> dВ
{11d} PERFORMAN (I.L. @ {11b}	ICE DELTA - I.L. @ {11a})	<u>0.25</u> dB	0.28 dB	<u>(),30</u> dB
{11e} PERFORMAN (I.L. @ [11c] -		<u>0.25</u> dB	0.28 dB	<u>0.30</u> dB
epared in accordance with MIL-	STD-100			
CONTRACT NO	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY AS	SOCIATES INC. FILE A	CAD/63/0510APDH.DOC	SHEET	12







APPENDIX D

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL87.5-155-10881 S/N P230-004 AEROJET 1331559-4 REV. (-)

PASSBAND RIPPLE (CON'T)

{11f}	RECORD PASS/FAIL	(0.5 dB MAX)
--------------	------------------	--------------





(11g) ATTACH PASSBAND RIPPLE

PERFORMANCE X-Y PLOT(S)

OUT-OF-BAND REJECTION

QUALIFICATION TEST PROCEDURE

-10°C

+15°C

+40°C

63-0005-010 PARA 4.5.5

Fc=87.5 MHz.

REF (5A) FOR INSERTION LOSS @ Fc

{12} WORST CASE REJECTION FROM 0.300 MHz TO 1 0 MHz

-60.5 dB (40.0 dB MIN) -60:4 dB (40.0 dB MIN)

-60.4 dB (40.0 dB MIN)

{13a} WORST CASE REJECTION FROM 188.25 MHz TO 1000.0 MHz

-61.8 dB (40.0 dB MIN) -62,7 dB (40.0 dB MIN)

 $-63.7 \, dB$ (40.0 dB MIN)

{13c} RECORE MEASURED TEMPERATURE

-<u>11.6</u>°C (-15.0 TO -10.0) (12.5 TO 17.5)

+13.7 ℃

+42.9 °C (40.0 TO 45.0)

{14} ATTACH REJECTION PERFORMANCE

X-Y PLOT'S)

_ DATE 12/20/96 TEST PERFORMED BY 12.

NOTE IF TEST WITNESSED BY AESD: _____ GSI: this time. DLD

Not witnessed

***** END OF FUNCTIONAL PERFORMANCE TEST ****

OUTLINE AND MOUNTING DIMENSIONS VERIFICATION

{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT

DIMENSION AND TOLERANCE

ACTUAL

OVER ALL LENGTH

 $3.50 \pm .03$

MEASUREMENT 3.501

MOUNTING HOLE CENTER

 $0.125 \pm .010$

0.125

BETWEEN UPPER MOUNTING HOLES

3.250

3.250

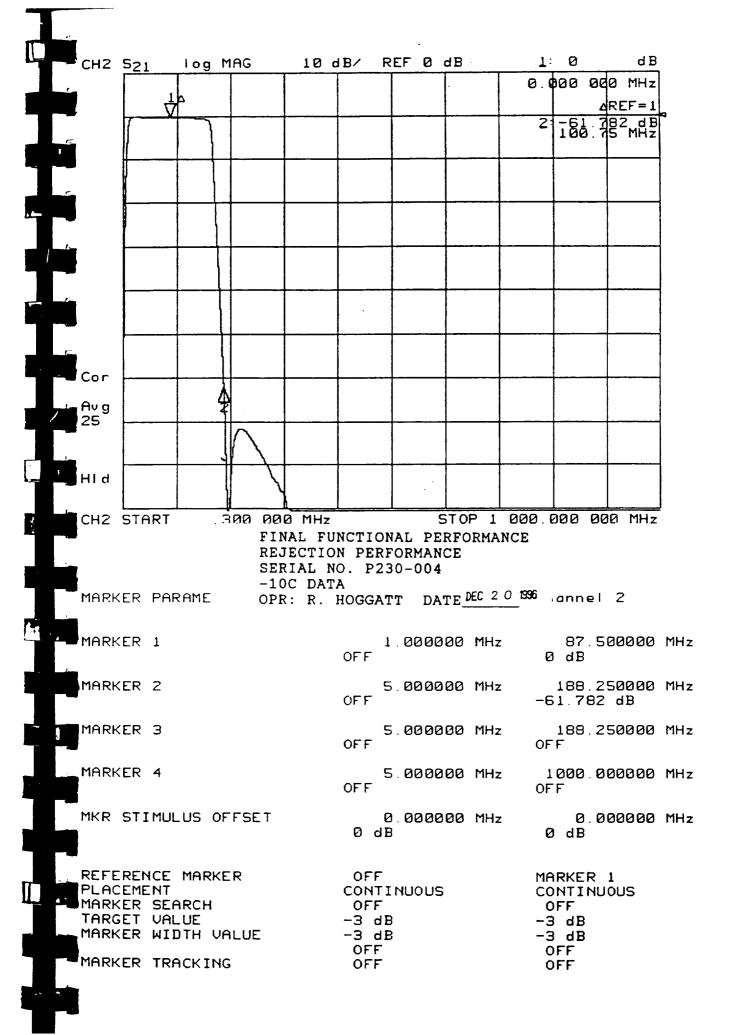
BETWEEN LOWER MOUNTING HOLES

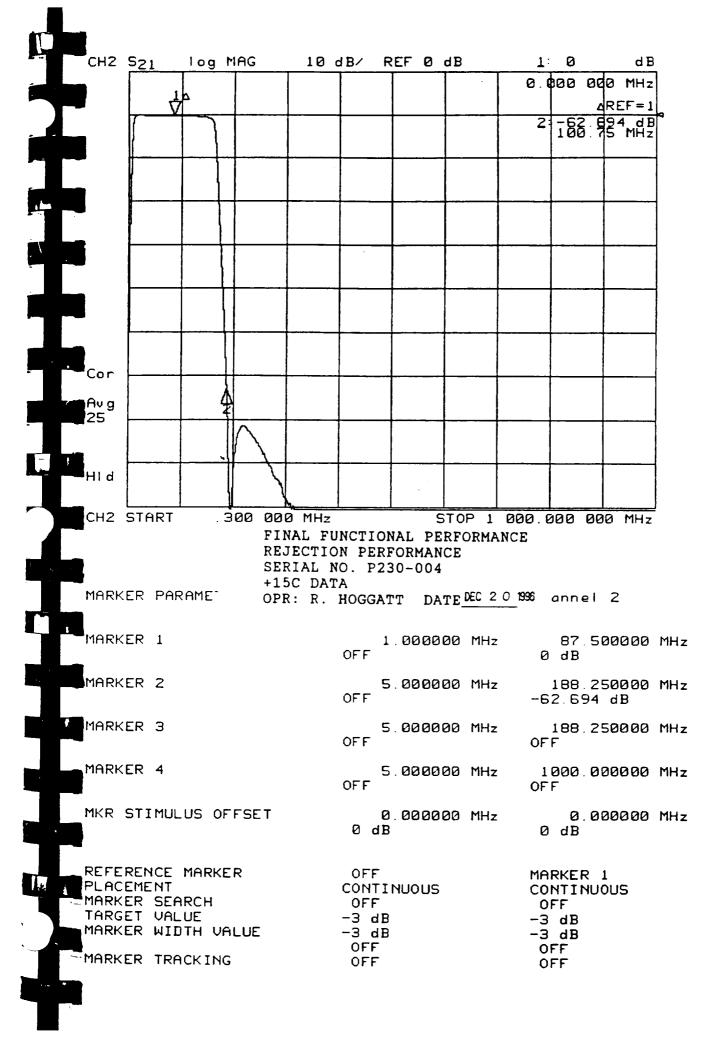
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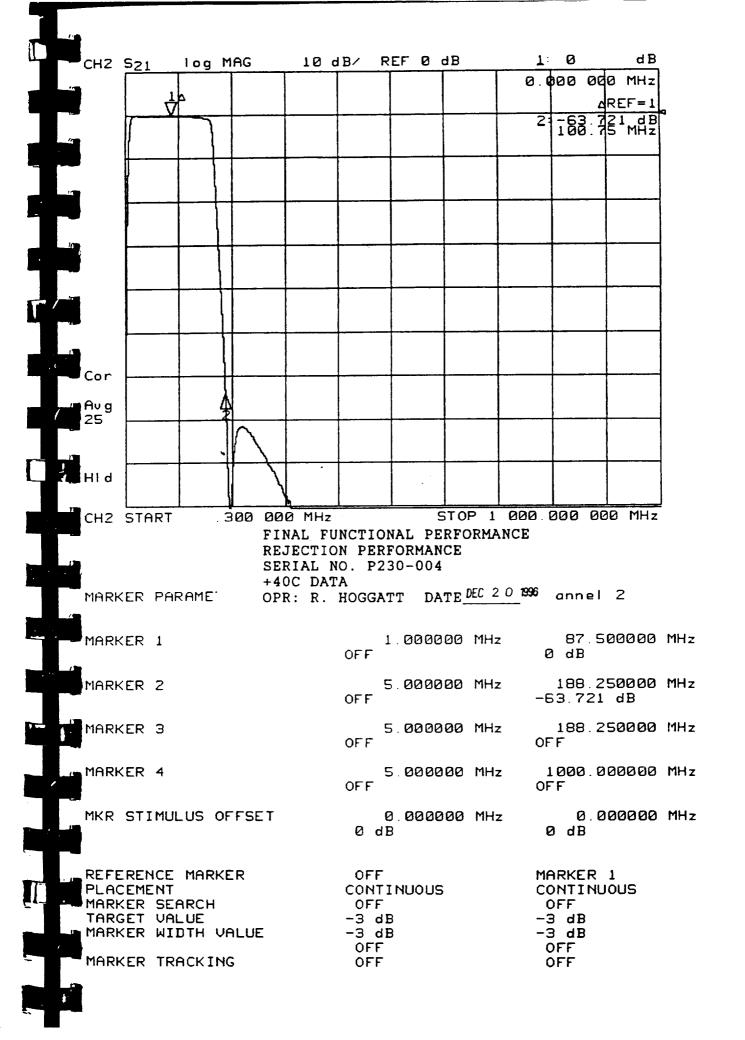
3.250

ared in accordance with MIL-STD-100

GUNTRACT NO	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APDH.DOC	SHEET	13







APPENDIX D

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL87.5-155-10SS1 S/N P230- CG4 AEROJET 153:559-4 REV. E

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE . 127.9 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

{24} TEST POINT MATRIX

REF	FREO	UNIT	VALUE		REF	FREQ	UNIT	VALUE
F1	? 5	MHz	<u>- 84.2</u> dB		F11	(*) 100.0	MHz	-0.24 dB
F2	1.0	MHz	<u>-67.ს</u> _dB		F12	(*) 125.0	MHz	- 0.34 dB
F3	€ 0	MHz	<u>- 18.5</u> dB		F13	150.0	MHz	- 0.60 dB
F4	⁻ 5	MHz	<u>- 7.57</u> dB		F14	160.0	MHz	-1.09 dB
F5	5.0	MHz	<u>- 1.76_</u> dB		F15	165.0	MHz	-4.72 dB
F6	15.0	MHz	<u>-0.21</u> dB		F16	170.0	MHz	-15.92dB
F7	25 0	MHz	<u>-0.11</u> dB		F17	200.0	MHz	-86.4 dB
F8	(1) 50 0	MHz	-0.1C dB		F18	300.0	MHz	- 88.3 dB
F9	(*) 75.0	MHz	<u>-0.21</u> dB		F19	500.0	MHz	- 106 OdB
F10	≘⁻.5	MHz	- <u>0.2C</u> dB	,	F20	1000.0	MHz	- 124.9 dB

TEST PERF. RMED BY: 12 HOGGATI DATE 12/20/9C

NOTE IF TEST ITNESSED BY AESD GSI this time. DLD

***** END OF ELNDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

QUALIFICATION TEST PROCEDURE

63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX D PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- b.) 3.0 dB EANDWIDTH PER QTP PARA 4.5.3.
- c.) OUT-CF-BAND REJECTION PER QTP PARA 4.5.5.
- d) INSERTION LOSS PER QTP PARA 4.5.2
- e) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) VSWR PER QTP PARA 4.5.1.

repared in accordance at 11/11L-STD-100

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0510APDH.DOC	SHEET	10

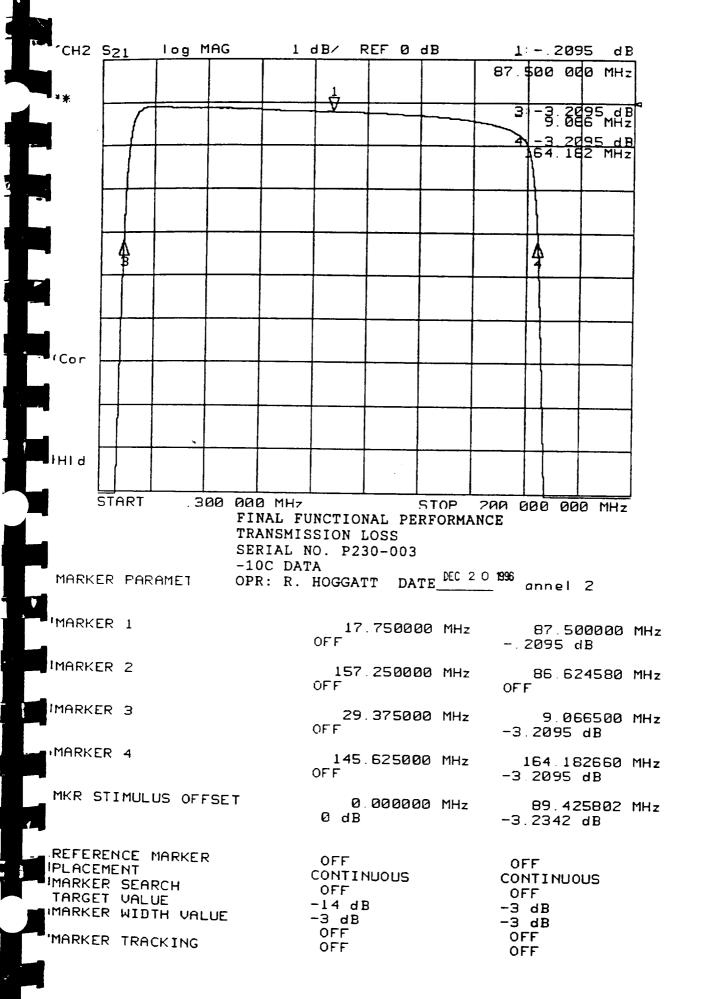
CH2 S21 log MAG 10 dB/ REF 0 dB 1:-.1626 dB 50.000 000 MHz 2 - 2085 dB 2444 dB 100 MHz 4 - . 3363 MHZ Cor a Av g HId START 300 000 MHz STOP 1 010.000 000 MHz POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P230-004 AMBIENT MARKER PARAME OPR: R. HOGGATT DATE DEC 2 0 1996 Jannel 2 17.750000 MHz MARKER 1 50.000000 MHz - 1626 dB MARKER 2 157.250000 MHz 75.000000 MHz OFF -. 2065 dB MARKER 3 29.375000 MHz 100.000000 MHz -.2444 dB MARKER 4 145.**625000 MHz** 125.000000 MHz OFF - 3363 dB MKR STIMULUS OFFSET 0 000000 MHz 89.425802 MHz 0 dB -3.2342 dB REFERENCE MARKER OFF OFF PLACEMENT CONTINUOUS CONTINUOUS MARKER SEARCH OFF OFF TARGET VALUE -14 dB -3 dB MARKER WIDTH VALUE -3 dB -3 dB OFF OFF MARKER TRACKING OFF OFF

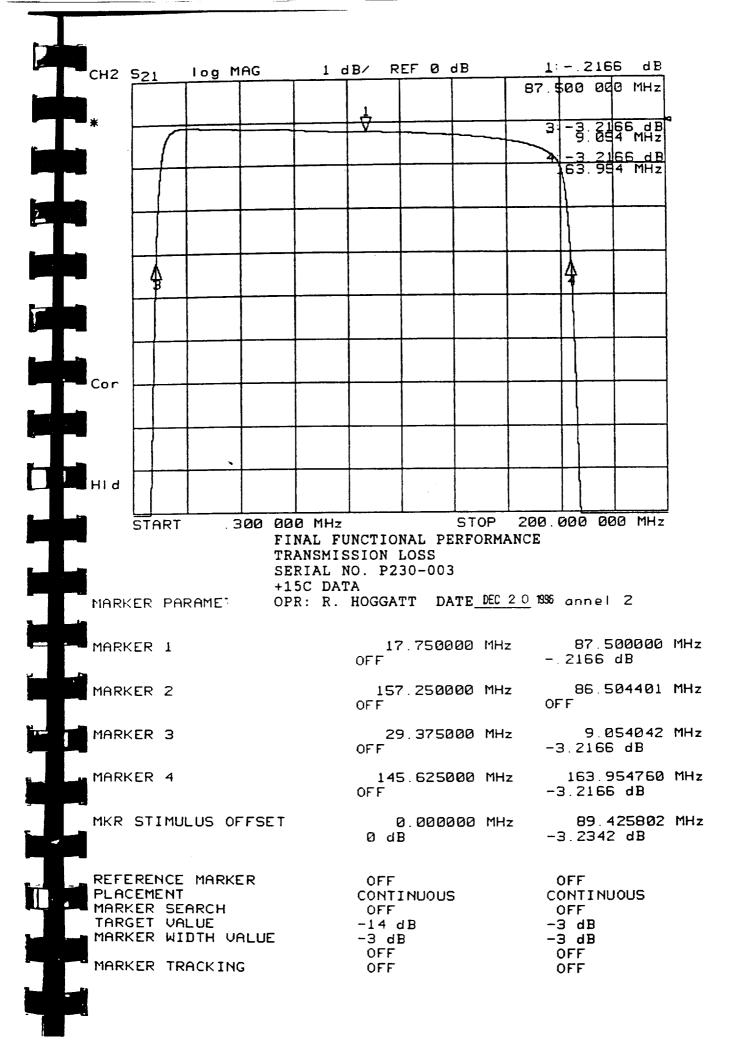
Channel 9 Bandpass Filter

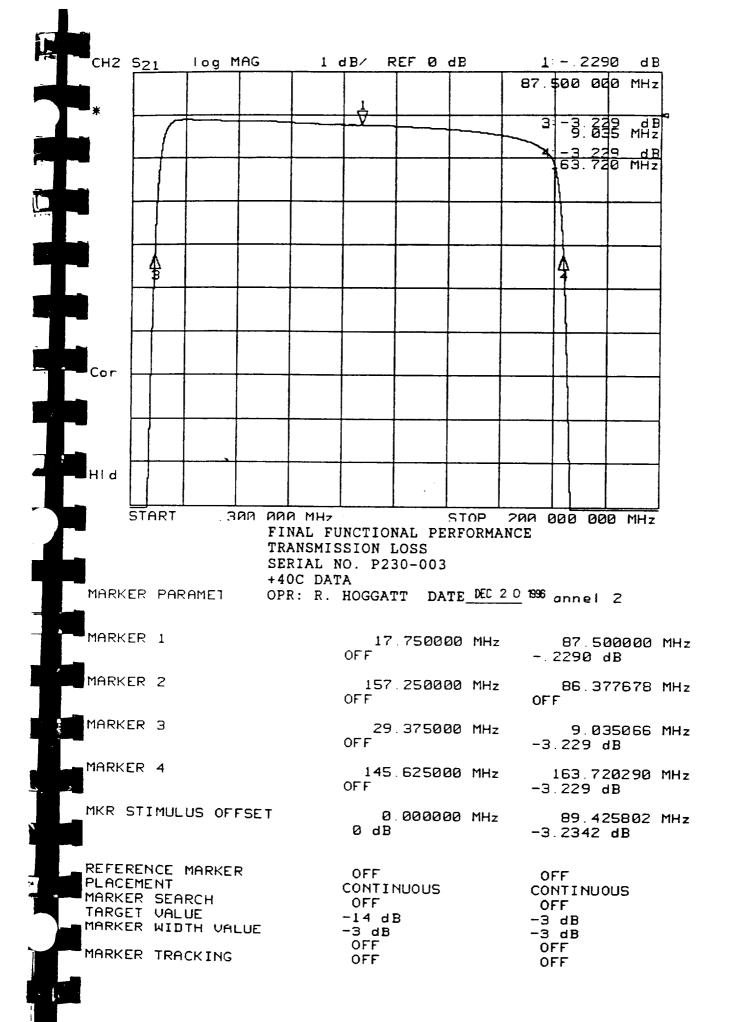
IF Filter (S/N: 1331559-4, S/N: P230-003)

APPENDIX D QUALIFICA	TION TEST REPO	DRT					
BANDPASS FILTER MODEL HL87.5-155-10SS1 S/N <u>P230</u> -003 AEROJET 133: 159-4 REV. E.							
3.0 dB BANDWOTH QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.3	-10°C	+15°C	+40°C				
(7) UPPER 3.3 a3 BANDEDGE	1 <u>64.18</u> MHz (163.0-165.0)	1 <u>63.95</u> Mhz (163.0-165.0)	16 <u>3.72</u> MHz (163.0-165.0)				
(8) LOWER 3 C UB BANDEDGE	<u>9.07</u> MHz (8.0-10.0)	9.05 Mhz (8.0-10.0)	9.04 MHz (8.0-10.0)				
(9) 3.0 dB RELATIVE BANDWIDTH	1 <u>55.11</u> MHz (153.0-157.0)	1 <u>54,90</u> Mhz (153.0-157.0)	15 <u>4.68</u> MHz (153.0-157.0)				
{10} ADD {7} AND {8} ÷ 2 =	<u>%ს.63</u> MHz (87.5 NOM)	<u>%6.50</u> MHz (87.5 NOM)	8 <u>6.38</u> Mhz (87.5 NOM)				
{10a} RECORD MEASURED TEMPERATURE	- <u>11.</u> <i>C</i> °C (-15.0 TO -10.0)	+ <u>13.9</u> °C (12.5 TO 17.5)	+ <u>√11.8</u> °C (40.0 TO 45.0)				
(6) ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	(1)	(\forall)	<u> </u>				
PASSBAND RIPPLE QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.4	-10°C	+15°C	+40°C				
{11a} MIN INSERTION LOSS FREQ	20.77 MHz	20.77 Mhz	70.77 MHz				
MIN INSERTION LOSS PERFORMANC	E -0.10 dB	- <u>0,10</u> dB	- <u>O.10</u> dB				
{11b} 75% BW LOWER BANDEDGE FREQ	<u> 3.19_</u> MHz	13.09 Mhz	1 <u>2.97</u> MHz				
75% BW LOWER BANDEDGE I.L. PER	F - <u>0.34</u> dB	- <u>0,36</u> dB	- <u>0.38</u> dB				
{11c} 75% BW UPPER BANDEDGE FREQ	1 <u>29.44</u> MHz	12 <u>9.34</u> Mhz	12 <u>9.22</u> MHz				
75% BW UPPER BANDEDGE I.L. PERI	- <u>0.34</u> dB	- <u>0.3C_</u> dB	- <u>0.38</u> dB				
{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	<u>0.24</u> dB	<u>0.76</u> dB	<u>0.28</u> dB				
{11e} PERFORMANCE DELTA (I.L. @ (11c) - I.L. @ {11a})	<u>0.24</u> dB	<u>0.76</u> dB	<u>().28</u> dB				

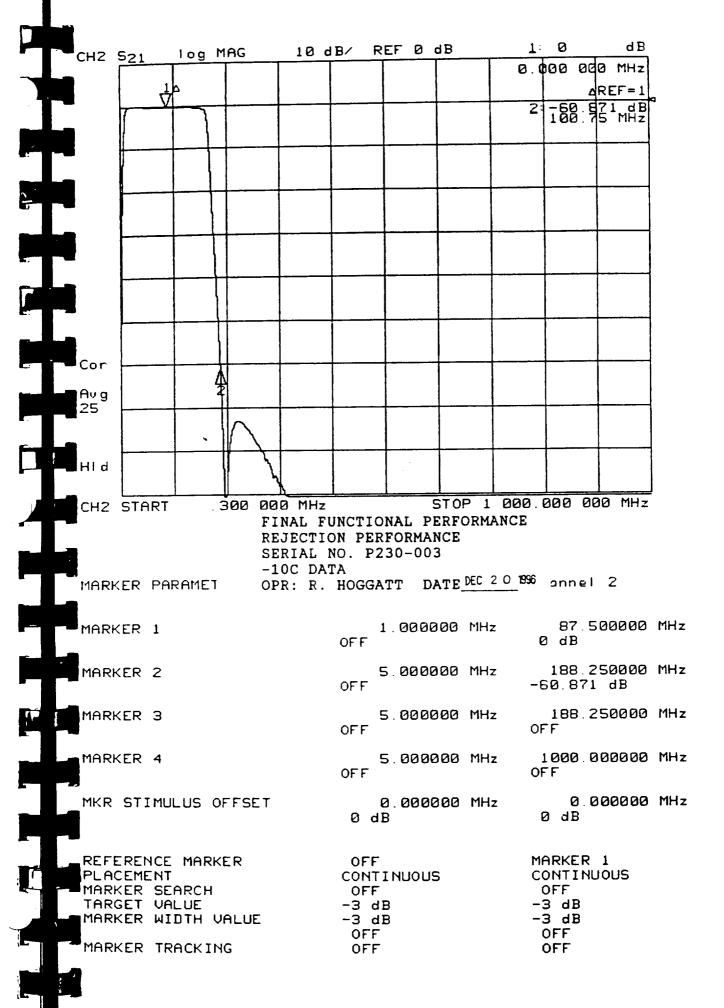
Prepared in accomfance with MIL-STD-100				
CONTRACT NO	SIZE A	57032	DWG. NO. 63-0005-010	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE. AC	AD/63/0510APDH.DOC	SHEET	12

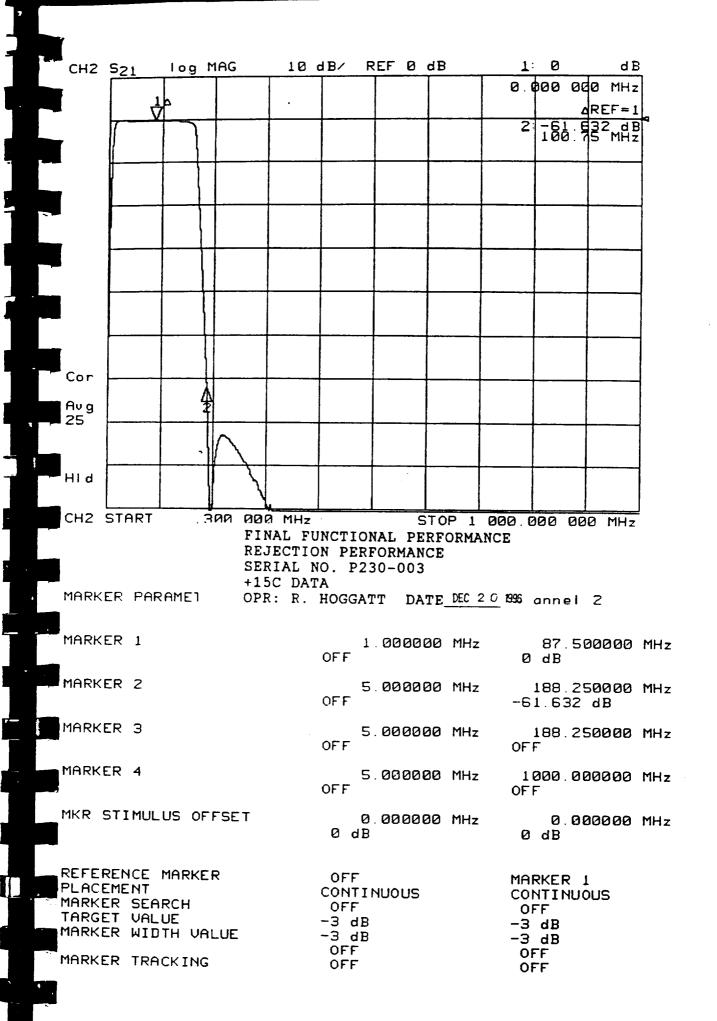


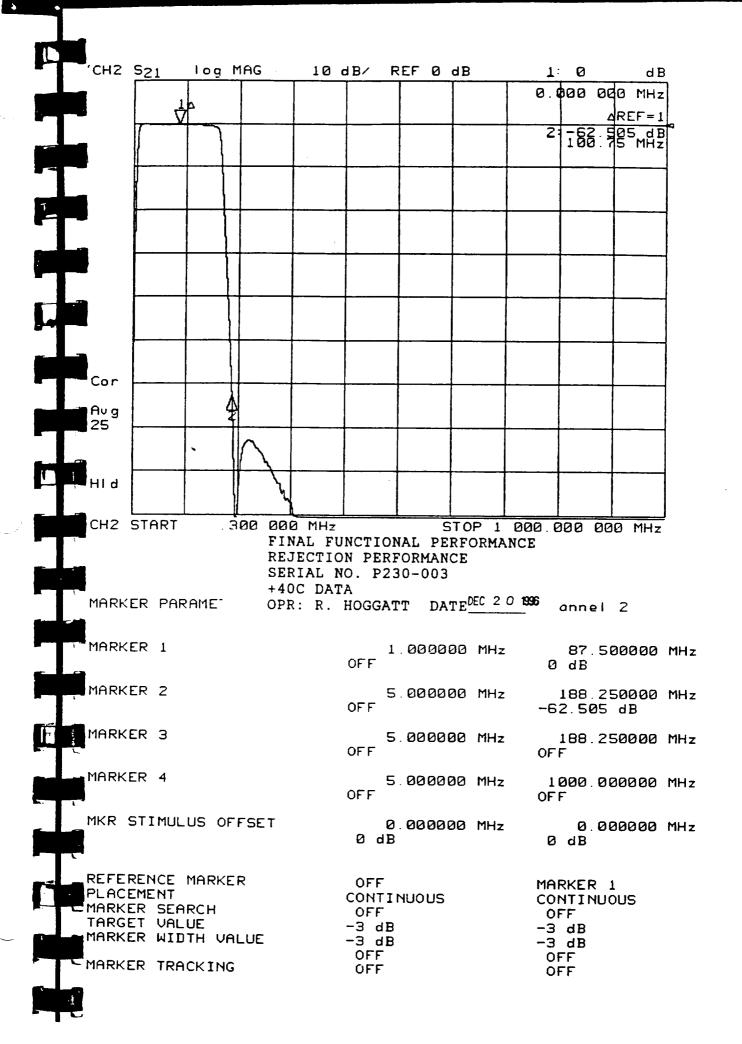




	APPENDIX D QU	ALIFICA	TION TEST REPO	RT				
	BANDPASS FILTER MODEL HL87.5-155-10SS1 S/N P236-603 AEROJET 1331559-4 REV. E							
	PASSBAND RIPPLE (CON'T)							
	(0.5 dB	MAX)	PASS/FAIL	PASS/FAIL	PASSIFAIL			
	{11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S)		<u> </u>	(1)	<u> </u>			
	OUT-OF-BAND REJECTION QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.5 Fc=87.5 MHz. REF {5A} FOR INSERTION LOSS @		-10°C	+15°C	+40°C			
	{12} WORST CASE REJECTION FRO 0.300 MHz TO 1 0 MHz	M	- <u>60,4</u> dB (40.0 dB MIN)	- <u>60.3</u> dB (40.0 dB MIN)	<u>(().3</u> dB (40.0 dB MIN)			
	{13a} WORST CASE REJECTION FR 188.25 MHz TO 1000.0 MHz	ОМ	<u>-८୦.৭</u> dB (40.0 dB MIN)	- <u>61.6</u> dB (40.0 dB MIN)	- <u>62.5</u> dB (40.0 dB MIN)			
	(13c) RECORD MEASURED TEMPER	RATURE	- <u> 1.2</u> °C (-15.0 TO -10.0)	+ <u> 3,9</u> °C (12.5 TO 17.5)	+ <u>47.0</u> °C (40.0 TO 45.0)			
	(14) ATTACH FLEJECTION PERFORM X-Y PLOT(S)	MANCE	_	(\lambda) (\lambda) (\lambda)	·			
	TEST PERFORMED BY R. HOGG	<u> </u>	DATE 12/20/96					
	NOTE IF TEST WITNESSED BY AESI	D:	GSI:					
	***** END OF FUNCTIONAL PERFOR	MANCE	TEST ****					
	OUTLINE AND MOUNTING DIMENSI {16} REFERENCE CUSTOMER DRAV							
	DESCRIPTION OF MEASUREMENT		DIMENSIO TOLERAN	- · · · · · - · · · · · · · · · · · · ·	-			
	OVER ALL LENGTH		3.50 ± .03	3.49	9			
	MOUNTING HOLE CENTER		0.125 <u>+</u> .0	10	6			
	BETWEEN UPPER MOUNTING HOLE	S	3.250	3.25	<u>50</u>			
	BETWEEN LOWER MOUNTING HOLI	ES	3.250	3.2	58_			
Pre	Prepared in accordance with MIL-STD-100							
	NTRACT NO	SIZE	CAGE CODE 57032	DWG. NO. 63-0005-010	REV.			
DA	DEN-ANTHONY ASSOCIATES INC.	FILE: ACAI	D/63/0510APDH DOC	SHEET	13			







APPENDIX C

QUALIFICATION TEST REPORT

BANDPASS FILTER MODEL HL87.5-155-10SS1 S/N_P230-G03 AEROJET 133:559-4 REV.____

BANDPASS CHARACTERISTICS MEASUREMENT

PER QTP PARA 4.6

(REF: AE-24087, PARA 4.8.2)

RECORD THE MIBIENT ROOM TEMPERATURE.+23.3 °C (+19°C TO +29.0°C)

(15) ATTACH PASSBAND PERFORMANCE X-Y PLOT

{24} TEST POINT MATRIX

REF	FREO	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	^ 5	MHz	-83.1 dB	F11	(*) 100.0	MHz	<u>- 0.25</u> dB
F2	1.0	MHz	<u>-67.0</u> dB	F12	(*) 125.0	MHz	<u>- 0.32 </u> dB
F3	₹ 0	MHz	<u>- 16,4 dB</u>	F13	150.0	MHz	<u>-0.60</u> dB
F4	⁻ 5	MHz	<u>- 1.39</u> dB	F14	160.0	MHz	<u>- 1.08</u> dB
F5	10.0	MHz	<u>- I. 69</u> dB	F15	165.0	MHz	<u>- ५.६८ dB</u>
F6	15.0	MHz	<u>- 0.21</u> dB	F16	170.0	MHz	<u>- (გ. 1_</u> dB
F7	25.0	МНz	<u>- 0.11</u> dB	F17	200.0	MHz	<u>- \$7, 8_</u> dB
F8	(*) 50 O	MHz	<u>-0.15</u> dB	F18	300.0	MHz	<u>- 88.7</u> dB
F9	(*) 75.0	MHz	<u>- 0.22 dB</u>	F19	500.0	MHz	- 104.7 dB
F10	9⁻.5	MHz	- 0.25 dB	DA F20	1000.0	MHz	<u>-110.2</u> dB

TEST PERF RMED BY: 12 HOGGATE 5 DATE 12/20/96

NOTE IF TEST STRESSED BY AESD______ GSI _____

***** END OF E-IDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

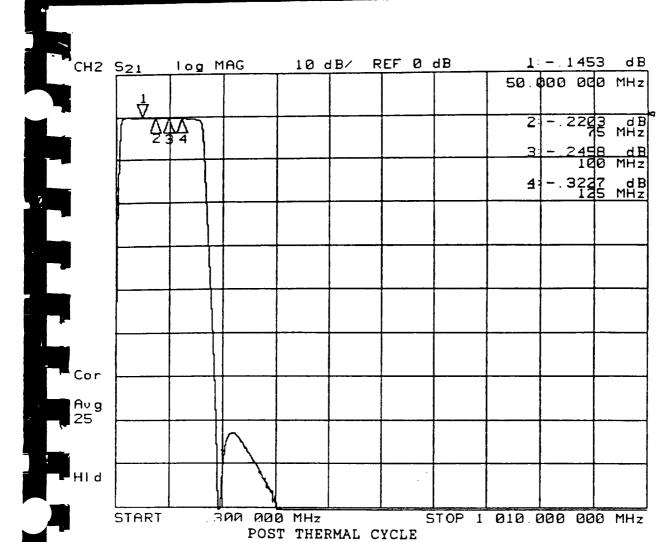
QUALIFICATION TEST PROCEDURE

63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX D PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- b.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
- c.) OUT-CF-BAND REJECTION PER QTP PARA 4.5.5.
- d) INSERTION LOSS PER QTP PARA 4.5.2
- e) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
- f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) VSWR FER QTP PARA 4.5.1.

Prepared in accordance in the MIL-STD-100					
CONTRACT NO	SIZE	57032	DWG. NO. 63-0005-010	REV.	
DADEN-ANTHONY ASSOCIATES I	NC. FILE AC	AD/63/0510APDH.DOC	SHEET	10	



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P230-003

AMBIENT

MARKER PARAME OPR

OPR: R. HOGGATT DATE DEC 2 0 1996 January 2

MARKER 1	17 750000 MHz OFF	50.000000 MHz 1453 dB
MARKER 2	157.250000 MHz OFF	75.000000 MHz - 2203 dB
MARKER 3	29.3 75 000 MHz OFF	100.000000 MHz 2458 dB
MARKER 4	145.625000 MHz OFF	125.000000 MHz - 3227 dB
MVP CTIMULUS AFFORT		
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89 425802 MHz -3 2342 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE MARKER TRACKING		

Channel 10 Bandpass Filter

IF Filter (S/N: 1331559-7, S/N: P233-005)

APPENDIX G ACCEPTAN	NCE TEST REPOR	RI			
BANDPASS FILTER MODEL FX217-78-10SS1 S/N P233-005 AEROJET 1331559-7 REV. E					
3.0 dB EANDWIDTH ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.5.3	-10°C	+15°C	+40°C		
(7) UPPER 3 0 dB BANDEDGE	Z <u>55,69</u> MHz (254.0 -256.0)	2 <u>55.41</u> Mhz (254.0-256.0)	25 <u>5.05</u> MHz (254.0-256.0)		
(8) LOWER 3 0 dB BANDEDGE	17 <u>9.10</u> MHz (178.0-180.0)	1 <u>78.92</u> Mhz (178.0-180.0)	17 <u>8.72</u> MHz (178.0-180.0)		
{9} 3.0 dB RELATIVE BANDWIDTH	76.59 MHz (74.0-78.0)	<u>76.49</u> Mhz (74.0-78.0)	7 <u>6.33 M</u> Hz (74.0-78.0)		
{10} ADD (7) AND (8) +2 =	7 <u>17.40</u> MHz (217.0 NOM)	2 <u>17.17</u> MHz (217.0 NOM)	21 <u>6.89</u> Mhz (217.0 NOM)		
{10a} RECORD MEASURED TEMPERATURE	(-15.0 TO -10.0)	+ <u>14.4</u> °C (12.5 TO 17.5)	+ <u>43.3</u> °C (40.0 TO 45.0)		
(6) ATTACH TRANSMISSION LOSS PERFORMALICE X-Y PLOT	<u>(</u> \(\forall \)	<u> </u>	<u>/</u> (\(\forall \)		
PASSBAND RIPPLE ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.5 4	-10°C	+15°C	+40°C		
{11a} MANUSERTION LOSS FREQ	2 <u>13.85</u> MHz	2 <u>14.55</u> Mhz	2 <u>13.65</u> MHz		
MIN INSERTION LOSS PERFORMANC	E <u>-0.56</u> dB	- <u>().(()</u> dB	- <u>0.64</u> dB		
{11b} 75% BW LOWER BANDEDGE FREQ	1 <u>86.38</u> MHz	186.19 Mhz	1 <u>85.99</u> MHz		
75% BW LOWER BANDEDGE I.L. PERI	F - 0.97 dB	- <u>1.62</u> dB	- <u>1.08</u> dB		
{11c} 75% BW UPPER BANDEDGE FREQ	2 <u>44.88</u> MHz	2 <u>44.69</u> Mhz	2 <u>4449 MHz</u>		
75% BW UPPER BANDEDGE I.L. PERF	- <u>097</u> dB	- <u>1.02</u> dB	- <u>1.08</u> dB		
{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	<u>0.41</u> dB	<u>0.42</u> dB	<u>0.44</u> dB		
{11e} PERFORMANCE DELTA (I.L. ⓒ {11c} - I.L. ℚ {11a})	<u>0.41</u> dB	<u>0.42</u> dB	<u>0.44</u> dB		
Prepared in accordance with MIL-STD-160					
CONTRACT NC. SIZE	CAGE CODE	DWG. NO.	REV.		

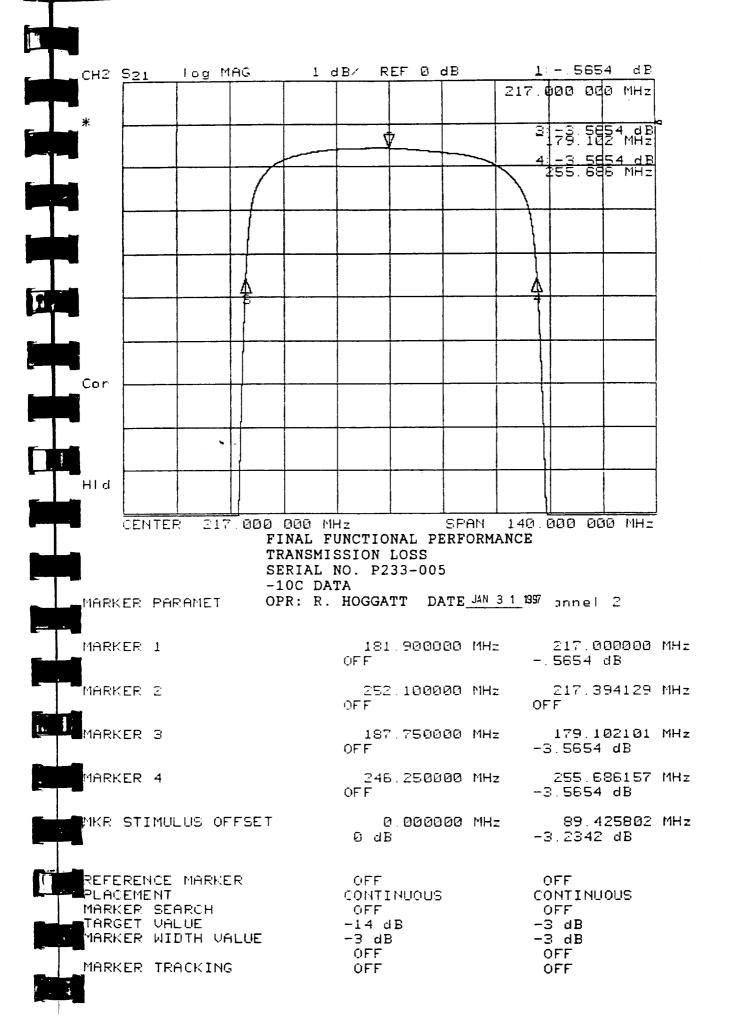
57032

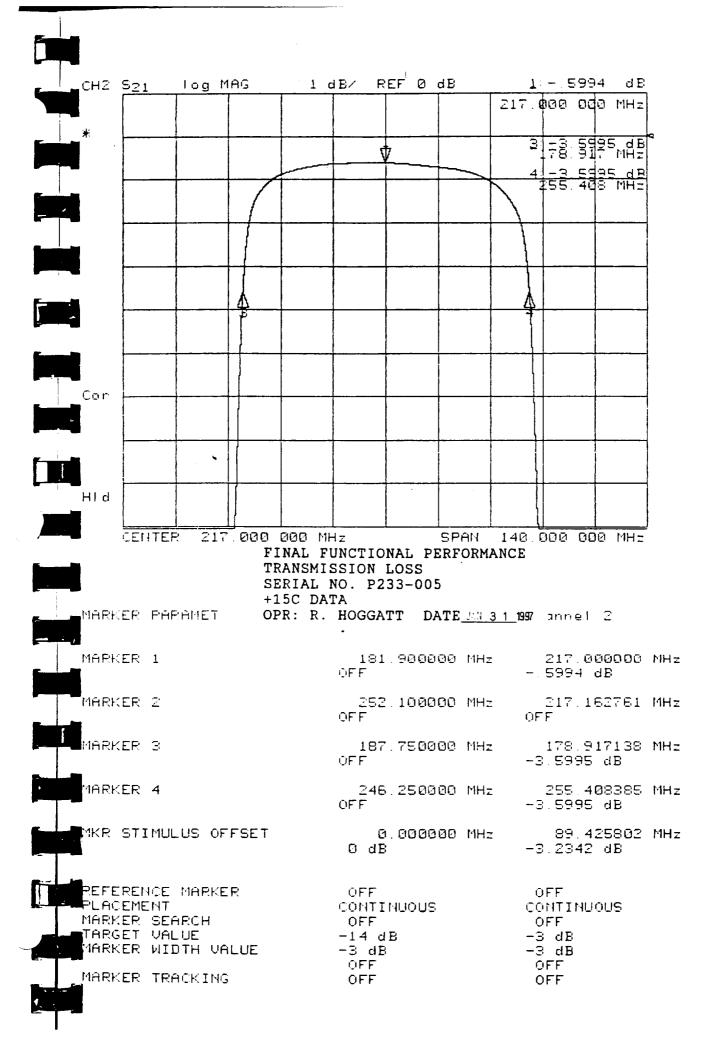
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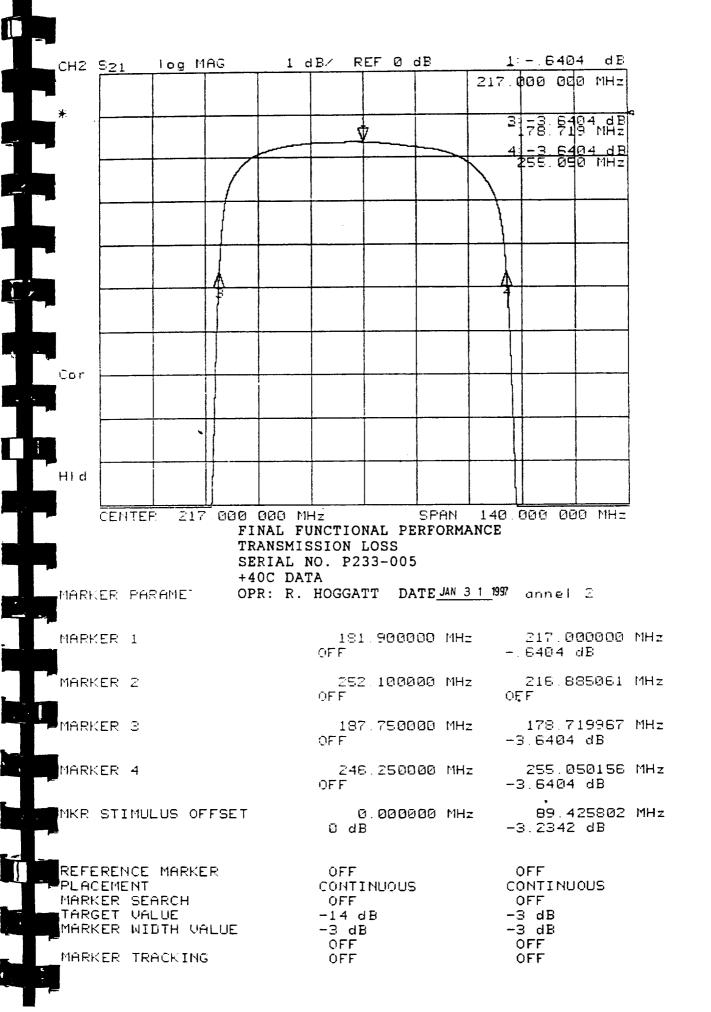
63-0005-02

SHEET

12



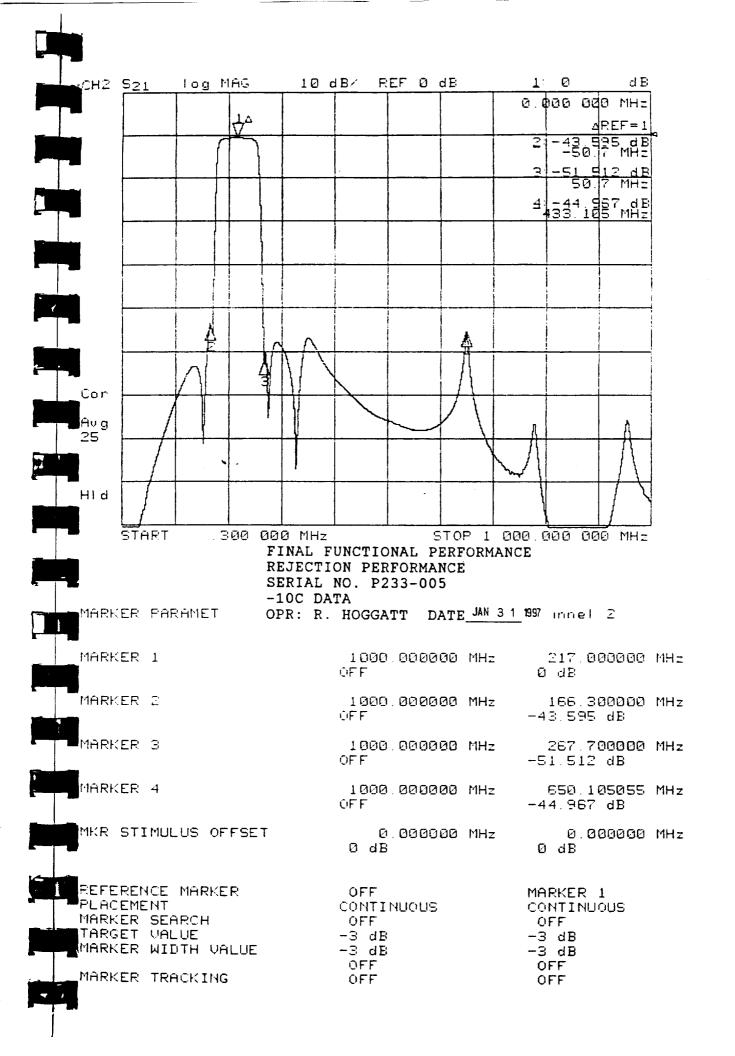


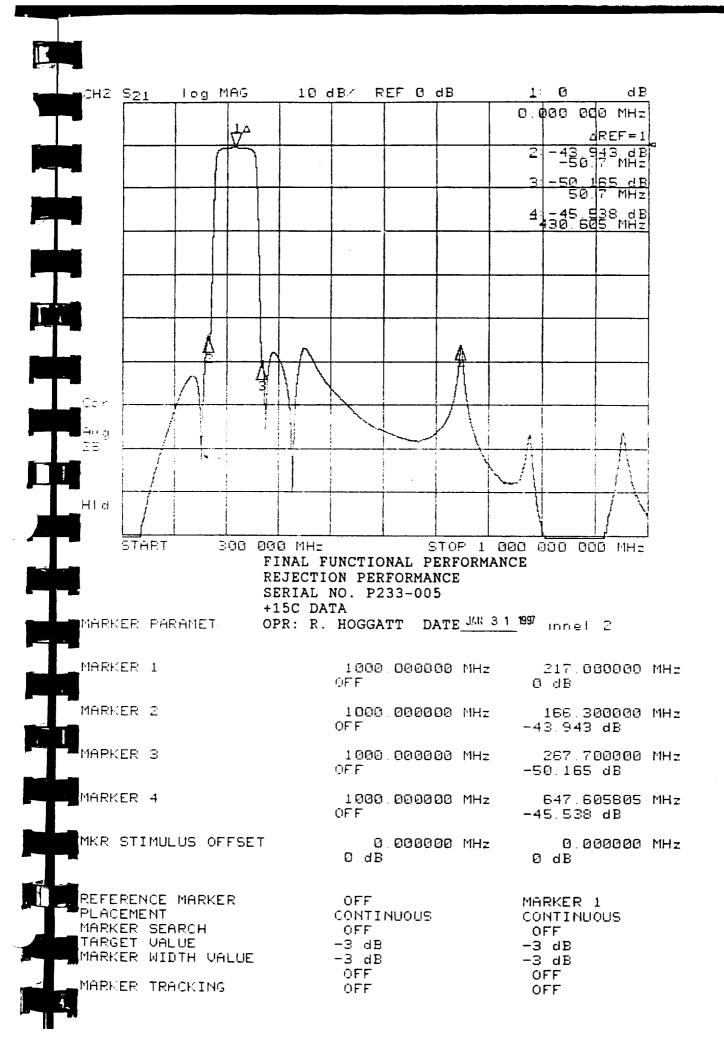


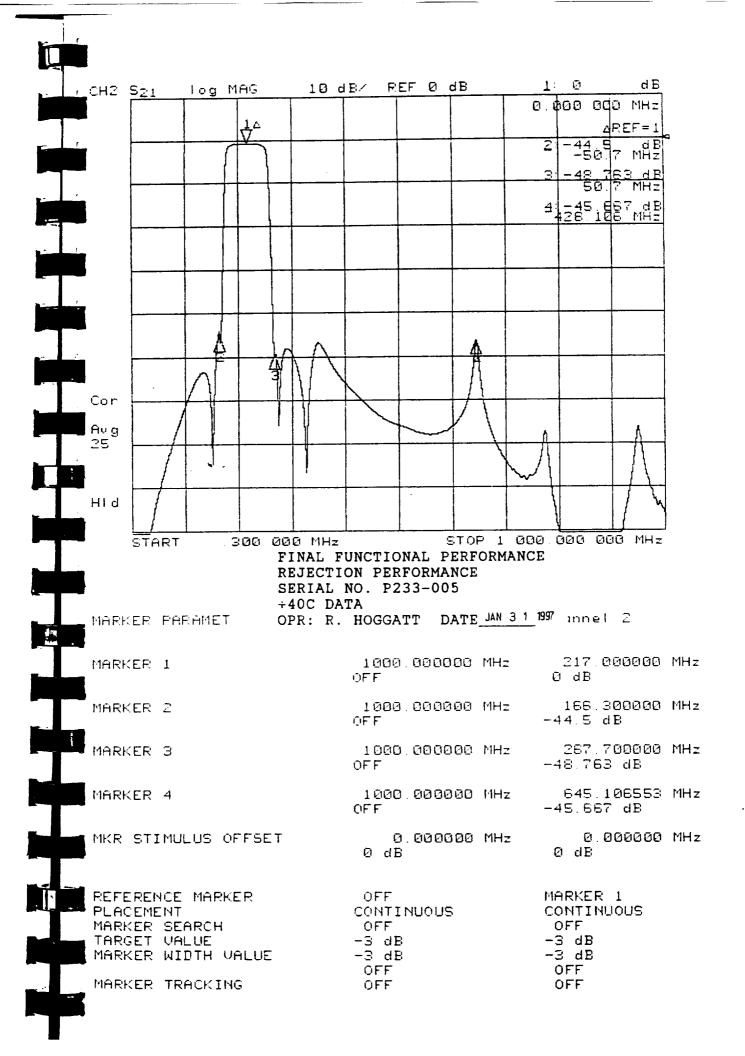
APPENDIX G **ACCEPTANCE TEST REPORT** BANDPASS FILTER MODEL FX217-78-10SS1 S/N P233 -005 AEROJET 1331559-7 REV. (F) PASSBAND RIPPLE CON'T) {11f} RECORD PASS/FAIL (0.7 dB MAX) (PASS/FAIL (PASS)FAIL (11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S) **OUT-OF-BAND REJECTION** ACCEPTANCE TEST PROCEDURE -10°C +15°C +40°C 63-0005-02 PARA 4.5.5 Fc=217.0 MHz. REF (5A) FOR INSERTION LOSS @ Fc {12} WORST CASE REJECTION FROM -43.1 dB -43.1 dB -43.4 dB 0.300 MHz TO 166.3 MHz (40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) (13a) WORST CASE REJECTION FROM -45.0 dB -45.5 dB -45.7 dB 267.7 MHz T > 1000.0 MHz 40.0 dB MIN) (40.0 dB MIN) (40.0 dB MIN) {13c} RECORD MEASURED TEMPERATURE -12.1 °C +14.4 °C +43.4 °C (-15.0 TO -10.0) (12.5 TO 17.5) (40.0 TO 45.0) {14} ATTACH REJECTION PERFORMANCE / (1) X-Y PLCT S TEST PERFORMED BY 12. HOGGAN DATE 1/31/97 NOTE IF TEST WITNESSED BY AESD: _____ GSI: _ Not Witnessed ***** END OF FUNCTIONAL PERFORMANCE TEST **** this time. DLD **OUTLINE AND MOUNTING DIMENSIONS VERIFICATION** {16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT	DIMENSION AND TOLERANCE	ACTUAL MEASUREMENT
OVER ALL LENGTH	5.50 ± .03	5,502
MOUNTING HOLE CENTER	0.125 ± .010	.125
BETWEEN UPPER MOUNTING HOLES	5.250	5,251
BETWEEN LOWER MOUNTING HOLES	5.250	5,25

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63:C502APGJ.DOC	SHEET	13







APPENDIX G

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL FX217-78-10SS1 S/N P233 -GOS AEROJET 1331559-7 REV. E

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE +24.4 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

(V)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE		REF	FREQ	UNIT	VALUE
F1	1.0	MHz	-103.5 dB		F11	217.0	MHz	-0.59 dB
F2	10.0	МHz	-104.4 dB		F12	(*) 224.0	MHz	-0.63 dB
F3	100.0	MHz	- 61.6 dB		F13	(*) 230.0	MHz	
F4	150.0	MHz	-61.5 dB		F14	240.0	MHz	- <u>0.67</u> dB
F 5	170.0	MHz	-45.2 dB		F15			- <u>0.54</u> dB
F6	178.0	MHz	<u>-6.29</u> dB		F16	250.0	MHz	- <u>1.48</u> dB
F7	184.0	MHz	- 1.30 dB			256.0	MHz	<u> 5.57</u> dB
F8	194.0	MHz			F17	264.0	MHz	<u>- 37. l_dB</u>
F9	/*\ 204.0	MHZ	<u>-0.76</u> dB		F18	300.0	MHz	-49.1 dB
F10			-0.64 dB		F19	500.0	MHz	-65.6 dB
F10	(*) 210.0	MHz	<u>- 0.60</u> dB		F20	1000.0	MHz	-86.5 dB
TEST PERFORMED BY: 12. HOGGAN DATE 1/31/97 DA								

NOTE IF TEST WITNESSED BY AESD_____ GSI_____ Not Witnessed this time. DLD ***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

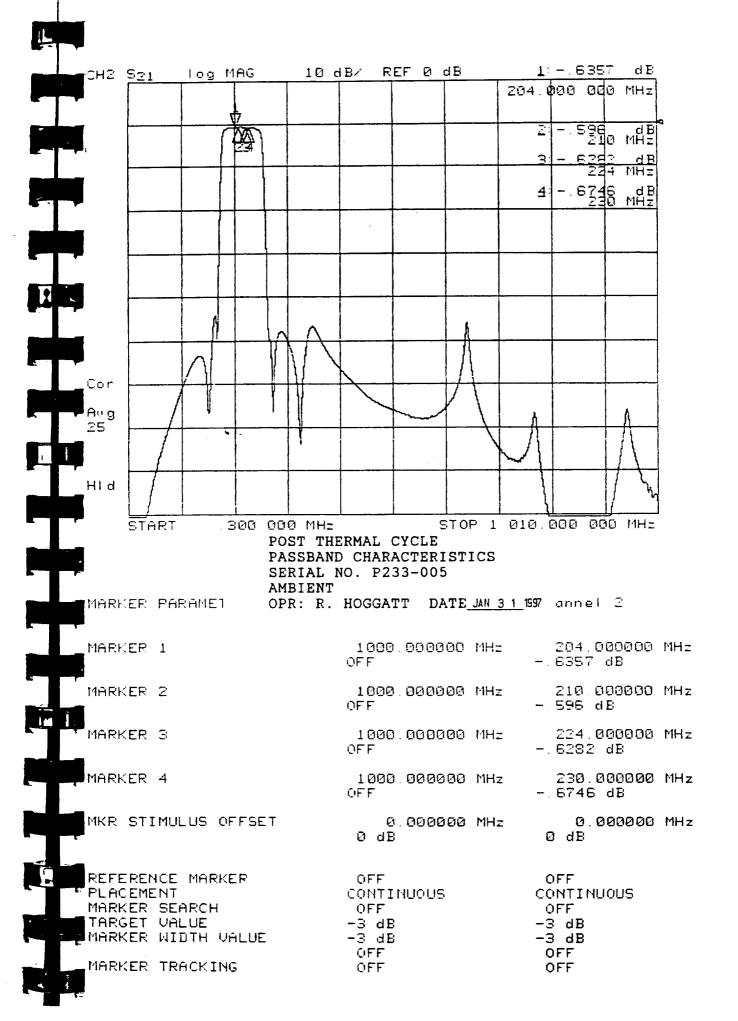
ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX G PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2
- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

spared in accordance with MIL-STD-100

DADEN INTUONICASCOCIATIONS	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: ACAD/83/0802APGJ.DOC		SHEET	10



Channel 11 Bandpass Filter

SAW Filter (S/N: 1331576-1, S/N: B01)

AEROJET P	EL ART: 133 : <i>DNO</i> (.	ECTRICAL TEST DATA SHEET 1576-1 PHONON PART: 18882 L TITLE: LCC DATE:	3, SERIAL:BO	1 E: 10:00 pm	
TEST: FIN	AL FUNCT	TOWAL	-44		
EQUIPMENT		3B SERIAL:3416A07382	CAL DUE: 18	/12/97	
	HP 347		cal due: <u>7/</u>	8/97	
FARAGR		REBUIREMENT TITLE	Data		P/F
REQ.	Q/ATP			_	_
3.2.1.1	5.2.1	OPERATING TEMPERATURE	<u>-4.7</u>	_ C	<u>p</u>
3.2.1.3	5.2.3	CENTER FREGLENCY &			
3.2.1.4		CENTER FREQUENCY STABILITY			_
		LO: 273.335/275.965 HHz	274.534		P
		HI: 369.335/371.065 MHz	378.745	_ MHz	<u>P</u>
3.2.1.5	5.2.4	3 db Bandwidth:			_
		LO: 34/36 MHz	34.842	<u>Hiz</u>	P
		HI: 34/36 MHz	35.137	MHz	P
3.2.1.6	525	PASSEAND SYMMETRY		-	
3.6.1.0	J. L. J	LD: /9.5 dB	6.3	dВ	P
		HI: /0.5 dB	0.0	_ d B	P
2012	F 2 (PASSBAND RIPPLE			
3.2.1.7	3.6.6	268.7-287.7 MHz: /1.0 dB	9.6	dВ	D
•			8.7	- 88	P
: _		356.7-383.7 MHz: /1.0 dB	2.7	_ ໝ	<u>-</u> -
3.2.1,8	5.2.7	INSERTION LOSS	~ .	.20 0	
		LO: 27.8/38.2 dB	29.4		P
:		HI: 27.6/30.2 dB	29.6	_ q _B	<u> </u>
3.2.1.3	5.2.8	INSERTION LOSS VARIATION			_
		LO: -0.4/8.4 dB	0.1	_ d3	<u>ρ</u>
		HI: -0.4/0.4 dB	0.0	_ dB	P
3.2.1.10	5.2.9	AMPLITUDE BALANCE			
		LO.HI: /0.5 dB	8.2	_ qB	p
3.2.1.11	5.2.10	OUT-OF-BOND REJECTION			
		BAND	PESK (dB)	MIDIH(MP)	
		WIDE: 1-225, 429-1998 MHz:	42.1	<u>8.008</u>	
		DUAL: 225.880-249.935,			
		298, 465-345, 935,			
		394.465-420.00 MHz:	41-4	B. 988	
		PEAK: 35.8/ dB	41.4 dB		P
		WIDTH: /7.2 MHz		R. 888 MHz	P
22442	E 2 11	SHAPE FACTOR			
3.2.1.12	J. E. 11	LO: /1.30 Unitless	1.29	Unitless	Þ
i			1.27	Unitless	P
20444	F 0 10		1.04	OW1 615-33	÷
3.2.1,14	5.2.12	VSWR (RETURN LOSS)	_		
		268.7-287.7,356.7-383.7 NH		Jrn.	
		DUAL S11: 7.5/ dB	7.7	— d3	
		DUAL S22: 7.5/ dB	9.4	— _{dB}	<u> </u>
4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS	5		Ω
		CENTER FREBLENCY: -0.2/8.2		_ Mz	*
		3 db DAHDWIDTH: -0.72/0.78		 	<u>alal</u> <u>alal</u> 01
		INSERTION LOSS: -0.5/0.5 d	B <u>(1</u>)	_ ₩	2
NONE	5.2.15	DATA SHEET SUMMARY	ลี/	60	•
		(PASS/FAIL)	- 1 27	ער אע	
PHONON C	orporati	OH		DAGE: 6Y858	
7 HERMAN				TEL: 283-651	
SIMSBURY	, CT 868	979		FAX: 283-651	-8618

File: 1ACOBO1A.DAT

Passband Symmetry = 8.3 dB

```
PHONON CORPORATION
FILE=1ACADO1A, DAT 11:51:48 65-28-1998
PN_100828_823 FINAL_FUNCTIONAL TEMPIC PROTOFLIGHT /N DUAL_SXX
96-23-1997 HP8753, SSDF, SSFF1X, SSREF
 VEDLENCY (NAZ): CENTER= 274.2 NIDTH= 100 INCR.= .4 SYSTEM BANDMENTH= 27
 FERENCES: LOSS(BB) = 29,38699 PHOSE(BEB) = 3885.015 BELAY(US) = 8 SLEPE (US/NHZ) = 8
RMS ERRORS: LOSS(DB)= .1691122 PHASE(DEB)= 1174.348
PLDT SCREES: LOSS 10 BB/DIV LASS 1 BB/DIV VS. FRED 10 NHZ/BIV
LOSS TO DE/DIV
LOSS 1 DB/DIV --
FRED 10 MHZ/DIU
PERK: LEVEL (DB) = 28.88334 FRED OHIZ) = 287.9386 DELRY (UB) =-.4207314 SIDELONE (DB) =-48.53478
ENERGY: LEVEL (DB) = 29.54826 CENTER (NHZ) = 274.7936 WIBTH (NHZ) = 36.43295 SIGEN (NHZ) >-.4393684
                                               HID (NHZ) AN-CTR(NHZ) AN-HID (NHZ) AN-SL (SB) LDX(NHZ)
                                                                                                          HIX (MIZ)
L(DB)
          LD (NHZ)
                      HI (164Z)
                                  CTR(MIZ)
                                                                          8. 90000
                                                 6.00000
                                                           287.93857
                                                                                      1.80
                                                                                             257. 93857
                                                                                                          287, 93857
                      287.93857
                                  287.93857
 -0.50
         287.93857
         259, 12256
                      298, 62328
                                  274.87286
                                                31.50064
                                                           275, 23694
                                                                         31.74068
                                                                                     -13.63
                                                                                             259, 12256
                                                                                                          298, 62328
  0.50
         258, 49085
                      290, 95621
                                  274, 72314
                                                32.46616
                                                           274.89532
                                                                         32.41492
                                                                                     -13.92
                                                                                              258, 49865
                                                                                                          290, 95621
  1.00
                                                                                             257.69284
  2.00
         257.69284
                      291.35654
                                  274.62170
                                                33.85770
                                                           274.89661
                                                                         33, 56348
                                                                                     -16.17
                                                                                                          291.55854
  3.00
         257, 11252
                      291.95459
                                  274.53357
                                                34. M287
                                                           274.89108
                                                                         34.01027
                                                                                    -17.52
                                                                                             257.11252
                                                                                                          291, 95459
                                                35, 61526
  4.88
         256, 68225
                     292, 23752
                                  274.44967
                                                           274.87796
                                                                         34.37143
                                                                                     -19.09
                                                                                             256, 68225
                                                                                                          292,29752
  5.00
         256.32919
                      292,59188
                                  274.46851
                                                35, 25250
                                                           274. 79745
                                                                         34,52347
                                                                                     -19.97
                                                                                              256, 32919
                                                                                                          292, 59180
                                  274.43097
                                                                         34.76382
                                                                                              256, 63476
  6.00
         256.93470
                     292, 82727
                                                36.75257
                                                           274.80038
                                                                                    -21.95
                                                                                                          292, 82727
                     293,62323
                                                38. 45868
                                                                                                          293.62323
         255. 16455
 19.00
                                  274.39389
                                                                         35.83694
                                                                                     -26.69
                                                                                              255, 16455
                                                           274.79904
 20.00
                                                41.25488
                                                                                    -37.86
         253, 78989
                     294, 97397
                                  274.34152
                                                           274.79198
                                                                         35. 15967
                                                                                             253, 78989
                                                                                                          294, 97397
 30.00
         252, 78462
                     295, 93668
                                  274.36066
                                                43.15265
                                                           274.79358
                                                                         35, 16855
                                                                                    -47.59
                                                                                             252, 78462
                                                                                                          295, 93668
                     296. 94354
                                  274, 44769
 48.88
         251, 95183
                                                44.99171
                                                           274.79355
                                                                         35, 16914
                                                                                    -51.29
                                                                                             251,95183
                                                                                                          296, 94354
BAND (MIZ)
           268, 788
                      287, 700
LMIN (DB)
                   -8.36
LNAX (DB)
                   0.26
LDEL (DB)
                   0.62
PHIN (DEG)
                <del>-200</del>1.37
PNAX (BEG)
                2001.27
PSEL (DEG)
                4002, 64
```

File: 1CCBBBLA_BRT

Passband Symmetry = 8.8 dB

```
PHONON CORPORATION
FILE=1008801A.BAT 11:51:51 05-28-1998
PN_100828_822 FINAL_FUNCTIONAL TEMP:C PROTOFLIGHT /N DURL_SXX
86-23-1997 HP6753, SSCF, SSFF1X, SBREF
FREDLENCY (MIZ): CENTER= 370.2 WIDTH= 100 INCR.= .4 SYSTEM BOOMISTH= 27
REFERENCES: LOSS (88) = 29.59872 PHASE (866) =-3362.098 BBLOY (US) = 8 SLBFE (US/NHZ) = 8
RMS ERRORS: LOSS (DB) = .1623449
                                 PHPSE (1988) = 1138.15
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED 10 MMZ/DIV
LOSS TO TRADITY
LOSS 1 DB/BIU
FRED 18 NHZ/DIU
PEAK: LEVEL (DB) = 28.96824 FRED (D4Z) = 356.8894 DELAY (UB) =-. 4835649 SIBELONE (DB) =-41.9448
EMERGY: LEVEL (BB) = 29.71339 (CENTER (MAZ) = 370.6586 WIDTH (MAZ) = 36.67384 SMEH (MAZ) = .1788324
                                               HID (INIZ) AN-CTRONIZ) AN-HID (INIZ) AN-SL (IN) LOX (INIZ)
                                                                                                            HIX (MIZ)
 L(DB)
          LD(MIZ)
                       H1 (MIZ)
                                   CTR(MIZ)
                                                                                               356.88937
                                                                                                            356.88937
                                                            356, 86937
                                                                           8, 90000
                                                                                        1.00
                                                  0.00000
          356, 88937
                      356, 88937
                                   356. 88937
 -0.63
                                                                                               354.28204
                                                                                                            386, 76691
                                   370.52448
                                                 32. 484B6
                                                            378, 46178
                                                                          32.6988i
                                                                                      -13.51
                      386, 76691
  8.50
          354, 28284
                                                                                                            387.18726
                                                                                               354. 82222
                                                                                      -14.58
                                                 33, 16504
                                                            370, 46865
                                                                          33, 37563
                                   370, 68474
          354. 82222
                      387.18726
  1.00
                                                                                               353. 5584S
                                                                                                            387.84891
                                                 34, 29846
                                                                          34.21479
                                                                                      -16.43
                                                            378.59897
          353, 55945
                      387.84891
                                   378, 69968
  2.00
                                                                                                            388.31418
                                                                          34.66121
                                                                                      -17.91
                                                                                               353, 17682
                                                 35, 13736
                                                            378.59274
                                   378, 74548
  3.00
          353, 17682
                      388, 31418
                                                                                                            388.70792
                                                 35, 83081
                                                            378.59149
                                                                          35.86644
                                                                                      -19.53
                                                                                               352.87711
                                   376.79251
          352.67711
                      388.79792
  4.88
                                                                                               352 61929
                                                                                                            389, 89598
                                                                          35. 14000
                                                 35, 47668
                                                            370,66190
                                                                                      -28.44
          352.61929
                      389. 09596
                                   378.85764
  5.80
                                                                                               352, 38935
                                                                                                            389, 42793
                                                            370.65283
                                                                                      -22.57
                                                                          35, 36757
          352.38995
                      389.42783
                                   378, 98651
                                                 37. 03708
  6.00
                                                            370.65654
                                                                                      -27.79
                                                                                               351.69666
                                                                                                            398, 31915
                                                                          35. 6135A
          351,69666
                      390.31915
                                   371.00790
                                                 38, 62250
 18.00
                                                            378.65868
                                                                          35.71067
                                                                                      -39.65
                                                                                               359, 48971
                                                                                                            391,68884
                                                 41.32013
          350, 48971
                                   371.14078
 20.00
                      391.80064
                                                            378,65842
                                                                                               349, 47466
                                                                                      -45.55
                                                                                                            392, 79791
                                                 43.32385
                                                                          35.71664
          349, 47406
                                   371.13599
 30, 86
                      392, 79791
                                                                                               348, 82856
                                                            378.65829
                                                                          35.71725
                                                                                      →7.52
                                                                                                            393, 38984
                                                 44.48929
          348. 82856
                      393, 30984
                                   371.06519
 48.00
BAND (MHZ)
             354, 700
                       383, 799
                   -8.62
LMIN (DB)
LMAX (DB)
                    0.28
LDEL (DB)
PMIN(DEG)
                -1932, 79
                 1922, 99
PMAX (BEG)
PDEL (BEG)
                 3855, 78
```

D06

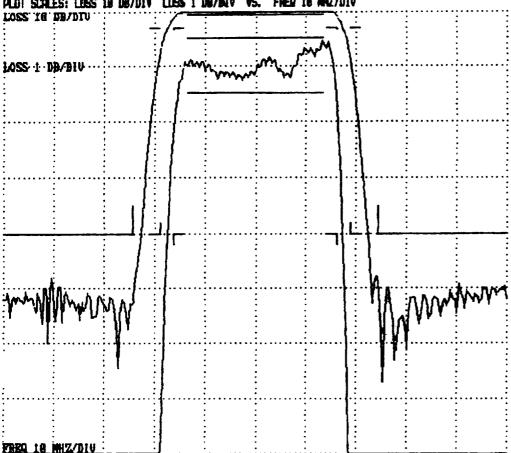
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PHONON CORPORATION
FILE=1ARAB01A. DAT 11:52:01 05-28-1998
PN_100828_823 FINAL_FUNCTIONAL_TEMP:R PROTOFLIGHT /N DUAL_SXX
  -23-1997 HP6753, SSCF, SSFFIX, SSREF
```

NUENCY (NHZ): CENTER= 274.2 WIDTH= 188 INCR.= .4 SYSTEM BRUDWIRTH= 27

NOT ERENCES: LOSS (DB) = 29.52902 PHASE (BBS) = 3824.559 DELAY (US) = 0 SLOPE (US/1012) = 0

RMS ERRORS: LOSS(DB)= .1678936 PHASE(BGB)= 1176.121

PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED 18 NHZ/DIV



PEAK: LEVEL (DB) = 29.06731 FRED (NHZ) = 287.5014 BELAY (UG) =-.4212485 SIBELBBE (BB) =-47.96545

ENERGY: LEVEL (DB) = 29.69407 CENTER (04/Z) = 274.3331 WIDTH(06/Z) = 36.40004 SKEH(04/Z) =-.3011602 LB(MHZ) HI (MIZ) CTR(MIZ) NID (NHZ) AN-CTRONIZ) AN-NIB (NHZ) AN-SL (DB) LDX (NHZ) HIX (MIZ) L(DB) 9. 99000 287.50137 287.50137 287,50137 -0.46 287, 58137 8. 00000 .. 287, 50137 287, 50137 9,58 258, 71957 298, 14474 274, 42767 31.43417 274,62213 31.38329 -12,66 258, 71857 298, 14474 298, 58843 274, 28955 32, 42178 274, 45267 32,32973 -13, 99 258, 87864 298, SB843 1.80 258, 97864 257, 29385 291, 18848 274, 19714 33, 88655 274, 44931 33, 46672 -16.26 257.29385 291, 18948 2.80 256, 79789 291.51144 274, 18968 34, 88356 274, 44678 33, 98676 -17.62 256, 79789 291.51144 3.00 4.99 256, 28891 291.84784 274,86439 35, 55693 274, 42490 34, 25242 -19.20 256, 20091 291.84784 255, 92957 292, 14362 274. 03659 36, 21465 274.34433 34.41453 -20, 89 255, 92957 292, 14362 5.00 255.63707 292, 38862 274.00865 36,74355 274.34500 34.64961 -22.09 255, 63707 292, 38862 6.00 10.00 254,76838 273, 96875 38, 48689 274.34661 34,91502 293, 16919 293, 16919 -25, 87 254, 76839 20.00 253.31447 294.52972 273, 92289 41.21526 274, 33170 35, 83354 294, 52972 -38, 14 253, 31447 39.80 252, 38968 295, 49216 273, 94092 43, 18248 274, 33310 35,04163 **47.66** 252, 38968 295, 49216

274.33397

35, 84219

-51.16

251.52971

296.51575

44.98684

251.52971 296, 51575 BAND (NHZ) 268,788 287.700

LMIN(DB) LMAX (DB) 0.27

40.88

LDEL (DB) 8.72 PMIN(DEG) -2003, 57

PMAX (DEG) 2005, 00 POEL (DEG) 4009,58

> :: 1AR8B81A. DAT Passband Symmetry = 8.3 dB

274.82274

TESTED BY:	RT: 133	1576-1 A TI	PHONON PART: 19882 TLE: <u>M.C.P.</u> Date:	3 SERIAL: <u>Bri</u> 1818 TIME	: 10:00 AV	ι
TEST: FINE	L FUNCT	<u>Tonal</u>		CAL DUE: 18/		
EQUIPMENT:			SERIAL: 3418487982 SERIAL: 2136483127	CAL DUE: 100	1/97	
	HP 347	'8A	SERIAL: 2136A63121	CHL BOC: [75	2/	
PARAGRA	APH Q/ATP	REDUIR	EMENT TITLE	DATA		P/F
REQ.	EDI	NOFRAT	ING TEMPERATURE	15.0	_ C	p
3.2.1.1	5 2 3	CENTER	FREQUENCY &			
3.2.1.3 3.2.1.4	J. E. J	CENTER	FREQUENCY STABILITY			
3.6.1.4		10: 27	3.335/275.065 MHz	274,118	_ NHz	P
		HT: 36	9.335/371.865 MHz	378.158	MHz	<u>p</u>
2215	524	3 dB I	ANDWIDTH:			
2.5.1.0	J. C. 1	in: 34	1/36 1Hz	34,884	_ MHz	P
		HT: 34	1/36 1Hz	35.889	19Hz	<u> P</u>
2216	525	PASSE	NO SYMETRY		_	
3.6.1.0	J.L.J	10: /	3.5 dB	8.3	_ dB	<u> P</u>
ŕ			8.5 dB	0.1	₫₿	<u>p</u>
2 2 1 7	5 2 4	D0000	AND RIPPLE			
3. 2.1.1	J. E. 0	24.0.7	-287.7 Mtz: /1.0 dB	8.6	_ 6 R	<u>p</u>
		256.7	-383.7 MHz: /1.0 dB		dB	P
2218	527	THOSE	TION LOSS	<u> </u>		
3.6.1.0	J. L. 1	10: 2	7.8/39.2 dB	29.5	_ dB	P
		HI: 2	7.8/38.2 dB	29.5 29.6	d3	P
2219	5 2.8	INSER	TION LOSS VARIATION		_	
3.5.1.7	J.L.0	10: -	0.4/0.4 dB	9.8_		p
		HI: -	0.4/8.4 dB	8.8	qB	P
3 2 1.19	5.2.9	AMPLI	TUDE BALANCE			_
		LO. HI	: /0.5 dB	8.9	dB	P
3.2.1.11	5.2.18	OUT-C	F-BAND REJECTION			
0.0			BAND .	PEAK (dB)	WIDTHORIZ)	
			1-225, 428-1888 Miz:	42.1	<u>8.968</u>	
		DUAL:	225.000-249.935,			
			298.465-345.935,			
			394.465-428.00 Mtz:		A STORE	n
		PEAK	: 35.8/ dB	42.1 dB	0.000 151-	<u> </u>
		MIDT			8.898 MHz	P
3.2.1.12	5.2.1	1 SHAPI	E FACTOR			D
			/1.38 Unitless		Unitless	P
			/1.30 Unitless	1.27	Unitless	<u> </u>
3.2.1.14	5.2.1	2 VSWR	(return loss)	D1_		
			7-287.7,356.7-383.7	MZ 7.4	#3	D
			S11: 7.5/ dB	- 7.8 9.6		
		JUPIL	S22: 7.5/ 68 TED FUNCTIONAL TESTS		•	
4.6.2	2.6.1	LALL P.	ER FREDUENCY: -8.2/8.	2 1842 +0,01	7 194z	P
		3 %E	BANDWIDTH: -8.72/8.			卫
:		INCE	RTION LOSS: -0.5/0.5		68	
HONE	5 2 1	5 MATO	SHEET SUMMARY			-
INA	V. C. 1		S/FAIL)	ρ	(Q1)	
PHONON (CORPORAT	TON			CAGE: 6YB58	
7 HERMA					TEL: 293-65	
SIMSBUR		878			FAX: 283-65	1-5618
	•					

DØ7

PHONON CORPORATION PN 100828 823 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL SXX -23-1997 HP8753, SSCF, SSFF1X, SSREF ALIENCY (NAIZ): CENTER= 370.2 WIDTH= 100 INCR.= .4 SYSTEM BANDMIDTH= 27 RMS ERRORS: LOSS(DB)= .1382874 PHOSE(DEB)= 1132.072 PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED 10 WHZ/DIV LOSS TO DEVELO LOSS + DB/BIV .. FREE 10 MHZ/DIU PEAK: LEVEL(DB)= 28.92852 FREQUENZ)= 356.2629 DELAY(UG)=-.4036162 \$TRECORE(DB)=-41.66381 ENERGY: LEVEL (88) = 29.67836 CENTER (NHZ) = 378.0062 NIBTH (NHZ) = 36.62452 SNEN (NHZ) = .2679406 L(DB) LD(MHZ) HI (MHZ) CTR(MIZ) WID (MAZ) AN-CTROMAZ) AN-WID (MAZ) AN-SL (DB) LOX (MAZ) HIX (MIZ) 356.26291 -0.63 356.26291 356, 25291 356, 26291 0.00000 8, 80880 0.00 356, 26291 356,26291 0.50 386.06607 353, 69876 369,86242 32.36731 369, 62225 32.78248 -13.58353, 69876 386,86687 353, 44592 386, 53946 1.00 369. 9926A 33.09354 369.79764 33, 85211 -14.08 353, 44592 386, 53946 387.22382 2.00 352, 97479 378, 89891 34,24823 369.81342 34.20435 -16.51352, 97479 387, 22382 3.80 352,68510 387, 59431 370, 14972 35,86920 359, 93341 34, 43936 -17.20 352,69518 387, 69431 352, 32989 388.09543 4.88 370.20816 35.77454 369.93112 34,82045 -18.79 352, 32009 388, 89543 352.05579 5.00 369. 93616 388.48743 370.27161 36, 43164 35, 12239 -29.58 352, 65579 388, 48743 6.00 351.82783 388.81998 378, 32349 36, 99295 35.24621 369.99847 -21.56 351.82783 388, 81998 18.00 351.14059 389.72519 378, 43289 38.58459 369.99609 35.54321 -25, 47 351, 14659 389, 72519 28,00 349, 92432 391.21164 370.56799 41.28732 370.00063 35.67190 -37.48 349, 92432 391.21164 39.00 348, 92001 392.28972 370.56488 43, 28978 370.00003 -45.94 35, 68130 348, 92001 392, 20972 348, 25568 44.58864 392,76431 378,51881 378. 88797 35. 68154 -47.83 348, 25568 392,76431 BAND (MIZ) 356, 788 383, 789 LMIN(DB) -8.31 LHAX (DB) 8.27 LBEL (DB) 0.58 PMIN (DEG) -1936.88 PMQX (DEG) 1926, 99 PREL (DES) 3863.97

9: 1CR8801A.DAT Passband Symmetry = 0.1 dB

002

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05/28/98
                        14:01
FILE-IERAGOIA. BAT 13:57:37 65-28-1998
PN 188828_823 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N WIDE_S21
96-23-1997 HP8753, SSREF, SSREF
FREQUENCY (NHZ): CENTER= 500.5 WIDTH= 999 INCR. = . 200125 SYSTEM BANDMEDTH= 999
REFERENCES: LOSS(DB) = 29.54311 PHASE(DEG) = 1848.559 DELAY(US) = 5.239233E-62 SLOPE(US/NHZ) = 8
RMS ERRORS: LOSS(DB) = 15.78511 PHASE(DEG) = 4267.842
PLOT SCALES: LOSS 18 DB/DIV VS. FRED 99.9 NHZ/DIV
LOSS TO DB/DTV
 PERK: LEVEL(DB) = 28.89969 FREDRONZ) = 356.3325 DELRY(US) =-.38148 SIDELERE(DB) =-41.79472
 ENERGY: LEVEL (DB) = 29.68258 CENTER (NHZ) = 322.5812 WIDTH (NHZ) = 73.07124 SHEN (NHZ) = 12.31584
                                              WID (NHZ) AV-CTRONEZ) AV-WID (NHZ) AV-SL (DB) LOX (NHZ)
                                                                                                        HIX (MHZ)
                                  CTR (MHZ)
  L(DB)
           LO(MHZ)
                      HI (MIZ)
                                                                        0.00000
                                                                                   0.00 356.33252
                                                                                                        356, 33252
                                                0.00000 356.33252
          356.33252
                      356, 33252
                                  356. 33252
  -8.54
                                                                                  -14.65 258.67365
                                                                                                        386. 65667
                                               32.35883 369.71176
                                                                        32.67136
                      386. $5667
                                  369, 87756
   9.50
          353.69864
                                                                                  -14.18 258.65719
                                                                                                        386.53308
                                               33, 86194
                                                         369.88225
                                                                        33, 19586
                      386.53388
                                  369.99213
   1,00
          353.45114
                                                                                                        387.21625
                                                                                  -14.18 257.29452
                      387.21625
                                  378, 89328
                                               34.24686
                                                         369, 87881
                                                                        33, 94183
          352, 97018
   2.00
                                                                        34, 42915
                                                                                  -14.24 256.70001
          352,68983
                      387.69394
                                  378, 15189
                                               35, 88411
                                                          369,86324
   3.00
                                                                                  -14.27 256.26788
-14.30 255.92581
                                                                                                       388. 08530
                                                                        34.72335
                                               35, 76886
                                                          369, 93558
          352.31644
                      388, 06530
                                  379, 20087
                                                                        35, 82882
                                                                                                        388, 47852
                                  370.25849
                                               36, 42004 369, 93915
                      388. 47852
   5.80
          352, 85847
                                                                                  -14.32 255.63283
-14.35 254.75798
                                                                                                        388. 61500
                                                                        35.29420
                                  378. 32245
                                               36, 98511
                                                          369, 97360
          351.82990
                      388. 81586
   6. 88
                                                                                                        389.72714
                                                                        35, 45383
          351.13516
                                  370, 43115
                                               38, 59198
                                                          369.99686
                      389.72714
  18.00
                                                                                  -14.35 253.39463
                                                                                                        391, 20752
                                               41.28113 378.88488
                                                                        35, 57143
          349, 92639
                      391.20752
                                  378.56696
  20.00
                                                                                  -14.34 252.38383
                                                                                                        392, 21204
                                  370.56683
                                                                        35.58864
                                               43.29841
                                                          378.98568
  32.90
          348, 92163
                      392, 21284
                                                                                  -14.34 251.51762
                                                                                                        392, 74753
                                                                        35,58116
                      392,74753 378,58388
                                               44.48738
                                                          378.86571
          348.26822
  49.90
               1,800 225,900 429,800 1800,800
 BOND (MHZ)
                             -8.64
                                       42.86
 LMIN(DB)
                   49, 49
 LMAX (DB)
                   93.58
                             64.76
                                       48.87
 LDEL (DB)
                  44.89
                             65.40
                                       6, 80
                 3796.72 -3851.27 -3339.18
 PMIN (DEB)
 PMAX (DEG)
                 7318.21 7751.52 7495.62
                 3611.49 11682.79 18834.12
 FILE: 1ERBB01A.DAT Out-of-band Rejection: PEAK= 42.1 dB WIDTH= 0.000 NHz
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DØS

PHONON CORPORATION

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FILE=1FR8801A, BAT | 11:52:08 65-28-1998
 PN 100828 823 FINDL FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX
    23-1997 HP8753, SSREF, SSREF, SSREF, SSREF
    JUDICY (MHZ): CENTER= 322.2 WIBTH= 200 INCR. = .4 SYSTEM BANDMIDTH= 200
 ##FERENCES: LDSS(DB)= 29.54311 PHASE(DEB)= 77.57881 DELAY(US)= .2250519 SLOPE(US/NHZ)= 0
 RMS ERRORS: LOSS (DB) = 24.07656 PHASE (DEB) = 944.0335
PLOT SCALES: LOSS 10 DB/DIV VS. FRED 20 NHZ/DIV
 LOSS TO DB/DTU
FREQ 26 NHZ/DIV
PEAK: LEVEL (DB) = 28.92852 FRED (NHZ) = 356.2629 DELAY (US) = 4.648593E-42 SIDELDBE (DB) =-41.66381
ENERGY: LEVEL (DB) = 29.68213 CENTER (DHZ) = 322.4483 NIDTH(MHZ) = 73.02405 SKEH (0HZ) =-.4518743
 L(DB)
          LD (NHZ)
                       HI (MHZ)
                                  CTR(NHZ)
                                               WID (MIZ) AN-ETROMEZ) AN-MID GMEZ) AN-SL CBB) LEX (MIZ)
                                                                                                          HIX (MHZ)
                      356.26291
 -8.61
         356. 26291
                                                           356.26291
                                  356.26291
                                                 8.00000
                                                                          8. 90000
                                                                                      8. 88
                                                                                              356, 26291
                                                                                                          356.26291
  8,58
         353.70587
                      386.03265
                                  369.86926
                                                           369,62225
                                                32, 32678
                                                                         32, 53635
                                                                                              258, 68939
                                                                                     -6.44
                                                                                                          386, 03265
  1.00
         353, 45303
                      386, 52798
                                  369, 99851
                                                33, 87495
                                                           369, 79764
                                                                         32,94513
                                                                                     -6.46
                                                                                              258, 85997
                                                                                                          386, 52798
  2.00
         352.98659
                      387.21482
                                  378, 89729
                                                34.23343
                                                           369, 81342
                                                                         34.09363
                                                                                     -6.57
                                                                                              257.28543
                                                                                                          387, 21482
  3.00
         352, 60965
                      387.68829
                                  379, 14899
                                                35, 97864
                                                           369, 93341
                                                                         34.32788
                                                                                     -6.57
                                                                                              256, 70038
                                                                                                          387, 68829
         352.32489
                      388.68990
  4.80
                                  378, 20748
                                                35.76501
                                                           369.93115
                                                                         34.71572
                                                                                     -6.68
                                                                                              256, 27518
                                                                                                          388, 08990
  5.00
         352, 05923
                      388, 48215
                                                36. 42291
                                  378, 27869
                                                           369, 93619
                                                                         35,00090
                                                                                     -6.62
                                                                                              255,92513
                                                                                                          388, 48215
                      388.81570
  6.80
         351.83982
                                  370, 32288
                                               36, 98569
                                                           369.99847
                                                                         35. 12614
                                                                                     -6.62
                                                                                              255, 63321
                                                                                                          386.81570
 18.88
         351.14278
                      389, 72250
                                  370, 43262
                                                38.57980
                                                           369.99612
                                                                         35, 42817
                                                                                     -6.61
                                                                                              254.76564
                                                                                                          389, 72250
 29.80
         349, 92587
                      391,28972
                                  378, 56781
                                                41.28384
                                                           379.00003
                                                                         35.55644
                                                                                     -6,56
                                                                                              253, 31297
                                                                                                          391.20972
 30, 00
         348, 92128
                      392, 28892
                                  378, 56586
                                                43, 28772
                                                           370. 88823
                                                                         35,55582
                                                                                     -6.58
                                                                                              252, 38858
                                                                                                          392, 20092
         348. 25635
                                  370, 50995
                                                           379.00000
 48. 60
                      392.76358
                                                44.58723
                                                                         35,5665
                                                                                     -6. 47
                                                                                             251.52789
                                                                                                          392, 76358
BAND (INIZ)
            268,700
                      287.700
                                 355.700 383.700
LMIN (DB)
                             -8.51
                   -0.47
                                       -0.29
LMAX (DB)
                    8. ₹
                             66.81
                                        1.28
LBEL (DB)
                    9.72
                             67.43
                                        1.58
PHIN (DEG)
                         -1959, 11
                                     -496.19
                -1076.84
PMAX (DEG)
                 794.65
                          1884, 45
                                     1227, 99
POEL (DEG)
                1870.58
                          3843.56
                                    1724.18
   T: 1FR8B81A.DAT: Out-of-band Rejection: PEAK= 42.7 dB WIDTH= 8.000 MHz
```

D89

PHONON CORPORATION:

FILE: 1FR8B81A. DAT' (+SSCF)

PN_100826_823 FINAL_FUNCTIONAL_TEMP:R PROTOFLIGHT /N DUAL_SXX 06-23-1997 HP8753, SSREF, SSREF, SSREF, SSREF, SSREF, SSCF REFERENCES: LOSS(DB) = 29.54311 PHRSE(BEB) = 77.57081 DELAY (US) = .2250519 SLIPE (US/NHZ) = 0

FREGLIENCY (NHZ)	LOSS (DB)	PHASE (DEG)
240.680	52.54	701.17
248.768	56.14	1335.77
256, 929	2.62	1875.89
265.000	-8.62	586, 67
273, 248	0.87	-74,52
281,400	8.84	-654.05
289, 560	-8.62	-1225.27
297.728	49.82	-1967.21
305.888	51.86	-1372.44
314.040	53, 97	-711.24
322, 200	51.24	-77.57
339.368	49, 97	56A. 76
338, 529	49.88	1240.47
346,680	46_39	1874.84
354, 848	-8.48	1366.77
363,000	0.21	639. 86
371.168	-0.06	394, 90
379.320	-8.97	-226, 59
387. 489	2.49	-759, 93
395,648	44.63	-1043.74
483, 888	46.53	-465.56
467* 000	TO: J3	- TOJ - JU

COUIPMENT: HP 8753D SERIAL:3418487382 CAL DUE:16/12/37 HP 3478A SERIAL:2136483127 CAL BUE:7/8/97 PARAGRAPH REQUIREMENT TITLE DATA P/F EQ. Q/ATP	rerojet pa Tested by: Test: <u>Fina</u>	RT: 133	4 TITLE: MAR DATE: 6	12497 TIME	: 10:00 AV	
EXECUTED THE SECONDOLOGY 1.2.1.1 5.2.1 OPERATING TEMPERATURE 1.2.1.3 5.2.3 CEMTER FREQUENCY 8 1.2.1.4 CEMTER FREQUENCY 8 1.2.1.4 CEMTER FREQUENCY 8 1.2.1.5 5.2.4 CEMTER FREQUENCY STABILITY 1.0: 273.335/275.665 Mtz 273.687 Mtz 1.0: 273.355/275.665 Mtz 3.2.1.5 5.2.4 3 dB permonitrity 1.0: 44/36 Mtz 1.0: 34/36 Mtz 1.0: 34/36 Mtz 1.0: 34/36 Mtz 1.0: 78.5 dB 1.1: 78.5 dB 1.1: 78.5 dB 1.2.1.7 5.2.6 PASSEND STYMETRY 1.0: 78.5 MTZ 1.0: 27.8/38.2 dB 1.0: 27.8/38.2 dB 1.0: 27.8/38.2 dB 1.0: 27.8/38.2 dB 1.0: -9.4/8.4 dB 1.0: -9.4/8.	EQUIPMENT:	HP 875	30 SERIAL: 3410A07382			
1.2.1.1 5.2.1 OPERATING EMPERATURE S5.6 C P 1.2.1.3 5.2.3 CENTER FREBUENCY & STABILITY LD: 273.335/275.865 NHz MHz D 1.3.63.335/371.865 NHz 365.569 NHz D 3.2.1.5 5.2.4 36 BANDWIDTH: LD: 34/36 NHz 34.755 NHz D 1.3.4/36 NHz 34.755 NHz D 1.3.4/36 NHz 34.755 NHz D 3.2.1.6 5.2.5 PASSBAND RIPPLE 268.7-287.7 NHz: /1.8 dB 8.6 dB D 3.2.1.7 5.2.6 PASSBAND RIPPLE 268.7-287.7 NHz: /1.8 dB 8.6 dB D 3.2.1.8 5.2.7 INSERTION LOSS LD: 27.8/38.2 dB 29.7 dB D 3.2.1.9 5.2.8 INSERTION LOSS LD: 27.8/38.2 dB 29.6 dB D 3.2.1.10 5.2.9 AND LITUDE BALANCE LD, HI: /8.5 dB 8.1 dB D 3.2.1.11 5.2.10 CUIT-OF-BAND REJECTION DAND DEAK(dB) NIDTH (UHz) NIDE: 1-225, 465-345, 935, 294.465-34			REQUIREMENT TITLE	DATA		P/F
3.2.1.3 5.2.3 COMER FREQUENCY 8 3.2.1.4 COMER FREQUENCY STABILITY LG: 273.335/275.865 NHz HI: 389.335/371.865 NHz HI: 389.335/371.865 NHz HI: 34736 NHz HI: 34736 NHz LG: 74.5 dB HI: 78.5 JB HI: 78.5			CONTRACTING TEMPERATURE	35.6	C	P
CENTER FREQUENCY STABILITY LG: 273.335/275.865 NHz 273.687 NHz P		5 2 3	CENTER FREGUENCY &		•	
LG: 273.335/275.665 NHz HI: 369.355/371.865 NHz HI: 369.355/371.865 NHz LO: 34/36 NHz HI: 34/36 NHz HI: 34/36 NHz LO: 74/36 NHz HI: 34/36 NHz LO: 78.5 dB HI: 78.5 dB HI: 78.5 dB HI: 78.5 dB 3.2.1.7 5.2.6 PASSBAND STAPLE 268.7-287.7 NHz: /1.8 dB 3.2.1.8 5.2.7 INSERTION LOSS LO: 27.8/38.2 dB HI: 9.4/8.4 dB B.6. dB P 3.2.1.9 5.2.8 INSERTION LOSS VARIATION LO: -0.4/8.4 dB HI:		0.2.0	CENTER FREEDIENCY STABILITY			
3.2.1.5 5.2.4 3 dB BANDWIDTH:						<u>P</u>
LO: 34/36 MHz 34.755 MHz P HI: 34/36 MHz 35.832 MHz P 3.2.1.6 5.2.5 PASSBAND SYMETRY LO: 78.5 dB 8.2 dB P HI: 78.5 dB 8.1 dB P 3.2.1.7 5.2.6 PASSBAND RIPPLE 268.7-287.7 MHz: /1.8 dB 8.6 dB P 3.2.1.8 5.2.7 INSERTION LOSS LO: 27.8/38.2 dB 29.7 dB P HI: 27.8/38.2 dB 29.6 dB P 3.2.1.9 5.2.8 INSERTION LOSS VARIATION LO: -0.4/8.4 dB 8.2 dB P HI: -0.4/8.4 dB 8.2 dB P 3.2.1.10 5.2.9 AMPLITUDE BALANCE LO, HI: 78.5 dB 0.1 dB P 3.2.1.11 5.2.10 OUT-OF-BAND REJECTION BAND PEAK (dB) WIDTH (MHz) WIDE: 1-225, 429-1809 MHz: 41.7 8.898 WIDTH: 7.2 MHz DUAL: 225.809-249.935, 298.465-345.935, 394.465-428.80 MHz: 44.1 8.898 WIDTH: 7.2 MHz 3.2.1.12 5.2.11 SHAPE FACTOR LO: /1.30 Unitless HI: /1.30 Unitless	:		HI: 369.335/371.065 MHz	369.569	MHz	<u> </u>
3.2.1.6 5.2.5 PASSBAND SYMMETRY	3.2.1.5	5.2.4	3 dB BANDWIDTH:			_
3.2.1.6 5.2.5 PASSBAND SYMMETRY	!					<u>P</u>
LO: /8.5 dB HI: /8.7 mbz 3.2.1.7 5.2.6 PASSBAND RIPPLE 268.7-287.7 mbz: /1.8 dB 3.2.1.8 5.2.7 INSERTION LOSS LO: 27.8/38.2 dB HI: 27.8/38.2 dB HI: 27.8/38.2 dB HI: 27.8/38.2 dB HI: -0.4/8.4 dB 3.2.1.9 5.2.8 INSERTION LOSS VARIATION LO: -0.4/8.4 dB HI: -0.4/8.4 dB 3.2.1.10 5.2.9 PAPLITUDE BALANCE LO, HI: /8.5 dB 3.2.1.11 5.2.10 CUT-OF-BAND REJECTION BAND WIDE: 1-225, 428-1660 Mbz: DUAL: 225.808-249.935, 298.465-345.935, 394.465-429.60 Mbdz: 41.7 0.808 MIDTH: /7.2 Mbz 3.2.1.12 5.2.11 SHAPE FACTOR LO: /1.30 Umitless HI: /1.30 Umitless DUAL S22: 7.5/ dB				35.832	_ MHz	<u>p</u>
3.2.1.7 5.2.6 PASSBNO RIPPLE 268.7-287.7 MHz: /1.8 dB 356.7-383.7 MHz: /1.8 dB 356.7-383.7 MHz: /1.8 dB 3.2.1.8 5.2.7 INSERTION LOSS LO: 27.8/38.2 dB HI: 27.8/38.2 dB HI: 27.8/38.2 dB HI: 27.8/38.2 dB HI: -8.4/8.4 dB HI: -8.26 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.8 dB HI: 29.7 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI:	3.2.1.6	5.2.5			_	_
3.2.1.7 5.2.6 PASSBNO RIPPLE 268.7-287.7 MHz: /1.8 dB 356.7-383.7 MHz: /1.8 dB 356.7-383.7 MHz: /1.8 dB 3.2.1.8 5.2.7 INSERTION LOSS LO: 27.8/38.2 dB HI: 27.8/38.2 dB HI: 27.8/38.2 dB HI: 27.8/38.2 dB HI: -8.4/8.4 dB HI: -8.26 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.8 dB HI: 29.7 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.4/8.4 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI: -8.8 dB HI:					_	<u> </u>
268.7-287.7 1912: /1.8 dB				6.1	_ ds	<u> </u>
3.2.1.8	3.2.1.7	5.2.6	PASSBAND RIPPLE			n
3.2.1.8					-	-
LO: 27.8/38.2 dB HI: 27.8/38.2 dB HI: 27.8/38.2 dB HI: 27.8/38.2 dB A: 29.6 dB A: 20.6 dB A: 20.6 d				0.0	_ 60	
3.2.1.9 5.2.8 INSERTION LOSS VARIATION LO: -0.4/8.4 dB HI: -0.4/8.4 dB HI: -0.4/8.4 dB HI: -0.4/8.4 dB HI: -0.4/8.4 dB 3.2.1.10 5.2.9 AMPLITUDE BALANCE LO,HI: /8.5 dB BAND BAND BAND PERK(dB) WIDTHOME) WIDE: 1-225, 429-1998 MHz: DUAL: 225.909-249.935, 298.465-345.935, 394.465-429.60 MHz: 44.1 B.968 PEAK: 35.8/ dB WIDTH: /7.2 MHz 3.2.1.12 5.2.11 SHAPE FACTOR LO: /1.30 Unitless HI: /1.30 Unitless HI: /1.30 Unitless LO: /1.30 Unitless DUAL SII: 7.5/ dB DUAL	3.2.1.8	5.2.7		20.7	ar.	D
3.2.1.9 5.2.8 INSERTION LOSS VARIATION LO: -0.4/8.4 dB HI: -0.4/8.4 dB HI: -0.4/8.4 dB HI: -0.4/8.4 dB HI: -0.4/8.4 dB 3.2.1.10 5.2.9 AMPLITUDE BALANCE LO,HI: /8.5 dB BAND BAND BAND PERK(dB) WIDTHOME) WIDE: 1-225, 429-1998 MHz: DUAL: 225.909-249.935, 298.465-345.935, 394.465-429.60 MHz: 44.1 B.968 PEAK: 35.8/ dB WIDTH: /7.2 MHz 3.2.1.12 5.2.11 SHAPE FACTOR LO: /1.30 Unitless HI: /1.30 Unitless HI: /1.30 Unitless LO: /1.30 Unitless DUAL SII: 7.5/ dB DUAL				29.6		-
LO: -0.4/8.4 dB HI: -0.4/8.4 dB HI: -0.4/8.4 dB HI: -0.4/8.4 dB 3.2.1.10 5.2.9 AMPLITUDE BALANCE LO,HI: /8.5 dB 3.2.1.11 5.2.10 OUT-OF-BAND REJECTION BAND BAND PEAK(dB) WIDTHOME WIDE: 1-225,429-1998 MHz: 41.7	3046	5 2 0		<u> </u>	_ 00	÷
3.2.1.10 5.2.9 APPLITUDE BALANCE LD, HI: /8.5 dB 3.2.1.11 5.2.10 GUT-OF-BAND REJECTION BAND BAND WIDE: 1-225, 429-1998 MHz: 41.7	3.2.1.7	3.6.0		8.2	₫₿ ·	Þ
3.2.1.10 5.2.9 APPLITUDE BALANCE LD, HI: /8.5 dB 3.2.1.11 5.2.10 GUT-OF-BAND REJECTION BAND BAND WIDE: 1-225, 429-1998 MHz: 41.7					-	P
LO,HI: /8.5 dB	2 2 1 18	523			_	
3.2.1.11 5.2.10 CUT-OF-BAND REJECTION BAND BAND WIDE: 1-225,429-1898 MHz: 41.7	3.5.1.10	J.L. /		6.1	₫₿	P
BAND	3.2.1.11	5,2,19	GUT-OF-BAND REJECTION		_	
DUAL: 225.000-249.935, 298.465-345.935, 394.465-420.00 MHz: 44.1	•••••			PEAK (dB)		
298. 465-345. 935,			WIDE: 1-225,429-1988 MHz:	41.7	0.008	
394.465-429.88 MHz: 44.1 B.888 P PEAK: 35.8/ dB 41.7 dB B.888 MHz P 3.2.1.12 5.2.11 SHAPE FACTOR LD: /1.38 Unitless 1.29 Unitless P HI: /1.38 Unitless 1.27 Unitless P 3.2.1.14 5.2.12 USBR (RETURN LDSS) 268.7-287.7,356.7-383.7 MHz DUAL S11: 7.5/ dB 7.5 dB P BUAL S22: 7.5/ dB 9.6 dB P 4.8.2 5.2.14 LIMITED FUNCTIONAL TESTS CENTER FRESHENCY: -8.2/8.2 MHz DEST P INSERTION LOSS: -8.7/8.72 MHz DEST P HONE 5.2.15 DATA SHEET SEMMARY (PASS/FAIL) PHONON CORPORATION 7 HERMAN DRIVE TO BEST SET SEMMARY (PASS/FAIL) COGE: 6Y858 TEL: 283-651-8211						
PEAK: 35.8/ dB 41.7 dB 9.888 MHz P 3.2.1.12 5.2.11 SHAPE FACTOR LD: /1.30 Unitless 1.29 Unitless P HI: /1.30 Unitless 1.27 Unitless P 3.2.1.14 5.2.12 VSMR (RETURN LDSS) 268.7-287.7,356.7-383.7 MHz DUAL S11: 7.5/ dB 7.5 dB P BUAL S22: 7.5/ dB 9.6 dB P 4.8.2 5.2.14 LIMITED FUNCTIONAL TESTS CENTER FRESHENCY: -8.2/8.2 MHz P INSERTION LOSS: -8.7/8.72 MHz P INSERTION LOSS: -8.5/8.5 dB D HONE 5.2.15 DATA SHEET SUMMRY (PASS/FAIL) PHONON CORPORATION 7 HERMAN DRIVE TEL: 283-651-8211						
Section Sect					8.000	
3.2.1.12 5.2.11 SHAPE FACTOR LD: /1.30 Unitless				41.7 dB	a ann 141-	<u>p</u>
LD:					<u>R-888</u> LIUX	<u> </u>
HI: /1.30 Umitless 1.27 Unitless P 3.2.1.14 5.2.12 VSWR (RETURN LDSS) 268.7-287.7,356.7-383.7 MHz DUAL S11: 7.5/ dB 7.5 dB P DUAL S22: 7.5/ dB 9.6 dB P 4.8.2 5.2.14 LIMITED FUNCTIONAL TESTS CENTER FRESHENCY: -8.2/8.2 MHz 3 dB BANDNIBTH: -8.72/8.72 MHz INSERTION LOSS: -8.5/8.5 dB dB P HONE 5.2.15 DATA SHEET SUMMARY (PASS/FAIL) PHONON CORPORATION 7 HERMAN DRIVE T.27 Unitless P CBB P	3.2.1.12	5.2.11	SHAPE FACTOR	1 20	Unitlace	D
3.2.1.14 5.2.12 VSIR (RETURN LDSS) 268.7-287.7,356.7-383.7 MHz DUAL S11: 7.5/ dB						5
268.7-287.7,356.7-383.7 MHz DUAL S11: 7.5/ 6B DUAL S22: 7.5/ 6B DUAL S22: 7.5/ 6B DUAL S22: 7.5/ 6B DUAL S22: 7.5/ 6B P 4.8.2 5.2.14 LIMITED FUNCTIONAL TESTS CENTER FREEHENCY: -8.2/8.2 MHz 3 6B BANDNIDFR: -8.72/8.72 MHz INSERTION LOSS: -8.5/8.5 dB NONE 5.2.15 DATA SHEET SUMMARY (PASS/FAIL) PHONON CORPORATION 7 HERMAN DRIVE CAGE: 6Y858 TEL: 283-651-8211		E 2 12			OMI 01633	<u></u> -
DUAL S11: 7.5/ 6B 7.5 6B P	3.2.1.19	2.5.10		7		
HONE 5.2.15 DATA SHEET SUMMARY (PASS/FAIL) PHONON CORPORATION 7 HERMAN DRIVE DAGE: 6Y858 TEL: 283-651-8211					ď₿	P
HONE 5.2.15 DATA SHEET SUMMARY (PASS/FAIL) PHONON CORPORATION 7 HERMAN DRIVE DAGE: 6Y858 TEL: 283-651-8211					_	P
HONE 5.2.15 DATA SHEET SUMMARY (PASS/FAIL) PHONON CORPORATION 7 HERMAN DRIVE DAGE: 6Y858 TEL: 283-651-8211	4.8.2	5.2.14				Ω_
HONE 5.2.15 DATA SHEET SUMMARY (PASS/FAIL) PHONON CORPORATION 7 HERMAN DRIVE DAGE: 6Y858 TEL: 283-651-8211				MHz <u>O</u>	10 iz	¥
HONE 5.2.15 DATA SHEET SUMMARY (PASS/FAIL) PHONON CORPORATION 7 HERMAN DRIVE DAGE: 6Y858 TEL: 283-651-8211	1					1
PHONON CORPORATION CORPORATION CORPORATION DAGE: 6Y858 7 HERMAN DRIVE TEL: 203-651-6211				™ _ ` _	_ as	*
PHONON CORPORATION CAGE: 6Y858 7 HERMAN DRIVE TEL: 203-651-9211	HONE	5.2.1		0 /	AD)	
7 HERMAN DRIVE TEL: 203-651-0211			(PRSS/FRIL)		41/	
7 HERMAN DRIVE TEL: 203-651-0211	DISCHOOL OF	000000	MU		MOGE: KYRSR	
7 Indiget arters	- 1		lun			-82 11
			37 9			

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PHONON CORPORATION
FILE=1048801A.BAT .11:52:15 65-28-1998
PN_100828_823 FINAL_FUNCTIONAL TEMP:H PROTOFLIGHT /N DUAL_SXX
86-23-1997 MP8753, SSCF, SSFF1X, SSREF
                                               INCR. = .4 SYSTEM BRADNIDTHE 27
FREDLIENCY (NOIZ): CENTER= 274.2 MIDTH= 188
                                                          DELAY (US) = 0 SLOPE (US/NHZ) = 0
                                  PHASE (366) = 3756.221
REFERENCES: LOSS (DB) = 29.68584
                                 PHOSE (DEG) = 1177.843
RMS ERRORS: LDSS(DB) = .1689383
PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED 10 MHZ/DIV
LOSS TO DB/DTV
LOSS 4 DB/BIV ..
FRED 10 NHZ/DIV
PERK: LEVEL (DB) = 29.26966 FRED(NHZ) = 288.159 DELAY(UB) =-.4199465 STRELORE (BB) =-47.26843
ENERGY: LEVEL (88) = 29.8592 CENTER (84Z) = 273.8792 WIDTH (84Z) = 36.36391 SWEH (84Z) =-.3276848
                                               HID (MHZ) AV-CTR (MHZ) AV-WIB (MHZ) AV-SL (DB) LOX (MHZ)
                                                                                                           HIX (MHZ)
                       HI (NHZ)
                                   CTR(MIZ)
          LD(NHZ)
 L(DB)
                                                                                                           288, 15897
                                                                                              288, 15897
         288, 15897
                      288, 15897
                                  288, 15897
                                                            288, 15897
 -0.42
                                                                                              258.31223
                                                                                                           289.57938
  8.50
                                                                                     -12.72
                                                31.36716
                                                            274, 18561
                                                                          31.24885
         258, 31223
                      289.67938
                                  273, 99579
                                                                                                           298.84486
                                                                                              257.67862
                                                                          32.26871
                                                                                     -14.66
                                                32, 36624
                                                            274.61378
  1.00
         257.67862
                      298, 84486
                                   273, 86176
                                                                                              256. 89392
                                                                          33.39431
                                                                                     -16.34
                                                                                                           298, 65775
                                                33.76382
         256, 89392
                      298,65775
                                   273,77582
                                                            274.00616
  2.00
                                                                                              256, 39994
                                                                                                           291.06464
                                                                          33, 22830
                                                                                     -17.71
                                                34,75470
                                                            273, 99506
         256.30994
                      291.86464
                                   273.68729
  3.00
                                                                          34.17842
                                                                                     -19.30
                                                                                              255, 88515
                                                                                                           291.48274
                                   273,64395
                                                35.51759
                                                            273.97711
         255.88515
                      291.48274
  4.80
                                                                          34.33812
                                                                                                           291.69577
                                                36.16156
                                                            273.89679
                                                                                     -21.22
                                                                                               255, 53421
         255, 53421
                      291.69577
                                   273.61499
  5.00
                                                            273.89542
                                                                          34.55976
                                                                                     -22,23
                                                                                               255, 24222
                                                                                                           291, 93625
                      291.93625
                                                 35.69483
         255, 24222
                                  273.58923
  6. 80
                                                                                     -27.63
                                                                                               254.37387
                      292,72818
                                                 38, 35431
                                                            273.88837
                                                                          34,81865
                                                                                                           292, 72818
         254.37387
                                  273, 55163
 18.00
                                                                          34.93242
                                                                                     -38, 43
                                                                                               252, 92145
                                                                                                           294, 67861
 29.00
         252,92145
                      294.87861
                                  273.50003
                                                 41.15717
                                                            273, 87886
                                                                                               251.99628
                                                                                     -47.84
                                                                                                           295, 86836
                                                                          34.93998
 30.00
         251.99628
                      295, 86836
                                  273, 52832
                                                 43.06409
                                                            273,87924
                                                                                                           296, 85444
                                                                          34.94651
                                                                                     -51.26
                                                                                               251, 16469
 48, 89
         251, 16469
                      296, 85444
                                  273, 58955
                                                 44.88976
                                                            273.87921
BAND (NHZ)
            268,788
                     287.700
LMIN(DB)
LIMAX (DB)
                    0.25
LDEL (DB)
                    8.67
PMIN(DEB)
                -2006, 45
PHICK (DES)
                 2009, 20
POEL (DES)
                 4815.66
File: 1AMEBB1A.DAT
                        Passband Symmetry = 8.2 dB
```

D12

```
PHONON CORPORATION
 FTLE=ICH8801A. DAT | 11:52:18 85-28-1998
    100828 823 FINAL FUNCTIONAL TEMP:H PROTOFLIGHT /N DUAL SXX
  __-23-1997 HP8753,5SCF,SSFF1X,SSREF
 FREMUENCY (NHZ): CENTER= 370.2 HILDTH= 100 INCR. = .4 SYSTEM BANDMEDTH= 27
 REFERENCES: LOSS (DB) = 29,55832 PHRSE (DEB) =-3526, 649 DELRY (US) = 0 SLOPE (US/NHZ) = 0
 RMS ERRORS: LOSS(DB)= .1304345 PHRSE(DEG)= 1133,931
 PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED 10 MHZ/DIV
 LOSS TO DB/DTU
 LOSS 1 - DB/DIU
FREQ 18 MHZ/DIU
PERK: LEVEL (DB) = 28.87544 FRED (MHZ) = 355.7528 DELAY (US) ≥-, 4848581 SIBELDBE (BB) >-41.8984
ENERGY: LEVEL (DB) = 29.66413 CENTER (MHZ) = 369.3611 WIDTH (DBZ) = 36.56918 SWENCHEZ) = .3615043
 L(DB)
          LD (MHZ)
                       HI (MHZ)
                                   CTR(INZ)
                                               HID (NEIZ) AN-CTR (NEIZ) AN-HZB (NEIZ) AN-SL (DB) LOX (NEIZ)
                                                                                                           HIX (MHZ)
                                                 6,00000
  -8. 67
         355, 75284
                      355, 75284
                                   355, 75284
                                                            355.75284
                                                                           LS
                                                                                       0.00
                                                                                               355. 75284
                                                                                                           355, 75284
                                   369.21500
  8.58
         353, 13931
                      385, 29868
                                                32, 15137
                                                            368, 95923
                                                                          32.34063
                                                                                               353. 13931
                                                                                     -13.18
                                                                                                           385, 29068
         352,87876
                      385, 89523
                                                                          33.35743
  1.00
                                   369.38300
                                                33, 82448
                                                            369, 13733
                                                                                               352.87076
                                                                                     -14.73
                                                                                                           385, 89523
  2.08
         352,48613
                      386, 59555
                                   369, 50065
                                                34, 18942
                                                            369, 14590
                                                                          33, 923%
                                                                                               352, 46613
                                                                                     -15.91
                                                                                                           344, 59555
  3.00
         352, 85298
                      387.08469
                                   369.56885
                                                35, 63171
                                                            369, 27296
                                                                          34.61012
                                                                                     -18.10
                                                                                              352, 85298
                                                                                                           387.88469
         351.75052
  4.80
                      387.48132
                                   369.61591
                                                35.73000
                                                            369.27563
                                                                         34, 94299
                                                                                     -19.78
                                                                                              351,75852
                                                                                                           387.48132
  5,00
         351.49542
                      387.87198
                                   369.68372
                                                36.37656
                                                            369, 34546
                                                                         35.07524
                                                                                     -29.68
                                                                                               351, 49542
                                                                                                           387, 87198
  6.88
         351.27237
                      388.21561
                                   369.74399
                                                36, 94324
                                                            369.34131
                                                                         35,29190
                                                                                     -22.82
                                                                                              351.27237
                                                                                                           388, 21561
 18.80
         358.58270
                      389.13318
                                   369.85794
                                                38, 55948
                                                            369.34766
                                                                         35,52617
                                                                                     -2A. BA
                                                                                                           389, 13318
                                                                                              358, 58278
 28.98
         349.37244
                      398.62998
                                  369.99622
                                                41,24756
                                                            369, 36957
                                                                         35.61662
                                                                                     -39, 48
                                                                                              349, 37244
                                                                                                           398.62008
 30.00
         348.38397
                      391.63919
                                  378, 81168
                                                43, 25522
                                                           369.36864
                                                                         35,62192
                                                                                     -46.22
                                                                                              348. 38397
                                                                                                           391.63919
 40.00
         347, 78895
                      392.18845
                                  369, 94878
                                                44, 47949
                                                           369.36881
                                                                         35.62245
                                                                                     48,25
                                                                                              347.78895
                                                                                                           392, 18845
BAND (MHZ)
            356, 798
                       383.700
LMIN(DB)
                   -8.33
LINAX (DB)
                    8.29
LBEL (DB)
                    8.62
PMIN (DEG)
                -1939, 27
   Y (DEB)
                1931.24
   (DEG)
                3870.51
  ... ICHODO1A. DAT
                        Passband Symmetry = 0.1 dB
```

Channel 12 Bandpass Filter

SAW Filter (S/N: 1331576-2, S/N: B01)

ELECTRICAL TEST DATA SHEET

AEROJET PART: 1331576-2 PHONON PART: 188824 SERIAL: 1891
TESTED BY: PORG 14 TITLE: MG. P. DATE: 6(24/9) TIME: 10:00 AVI
TEST: FINAL FUNCTIONAL

EQUIPMENT:	HP	8753D	SERIAL:3418887982	CAL	DUE: 18/12/97
	ΗP	3478A	SERIAL: 2136A83127	CAL	DUE: 7/8/97

			, <u></u>		
PAKAG	rafh	REQUIREMENT TITLE	DATA		P/F
REQ.	Q/ATP				
3.2.1.1	5.2.1	OPERATING TEMPERATURE	-4.7	C	P
3.2.1.3	5.2.3	CENTER FREQUENCY &		-	
3.2.1.4		CENTER FREQUENCY STABILITY			
		LO: 299.335/301.065 MHz	398.449	10 47	p
		HI: 343.335/345.065 MHz	344.323		p p
7215	524	3 dB BANDWIDTH:	OTT. OCT	. 1814	<u>-</u>
J. C. 11.0	0.614	LO: 15/16 MHz	15.436	Maj.	n
		HI: 15/16 MHz			P P
2016	5 A F		15.488	_ MHZ	<u> </u>
3.2.1.6	2.2.3	PASSBAND SYMMETRY			_
		LO: /0.5 dB	9.1	dB	<u>p</u>
		HI: /0.5 dB	0.1	gB	<u> </u>
3.2.1.7	5.2.6	PASSBAND RIPPLE			
		294.2-306.2 MHz: /1.8 dB	8.4	d₽	P
		338.2-350.2 MHz: /1.0 dB	9.4	₫₿	<u> </u>
3.2.1.8	5.2.7	INSERTION LOSS		-	
		LO: 27.8/38.2 dB	29.4	dB	D
		HI: 27.8/30.2 dB	23.7	d₿	P P
3.2.1.9	5.2.A	INSERTION LOSS VARIATION			<u> </u>
0.6.1.7	5.0.0	LO: -0.4/0.4 dB	-0.1	4D	n
			8.1	dB	p
30110	E 2 0	HI: -0.4/0.4 dB	<u> 6.1</u>	dB	<u> </u>
3.2.1.10	5.2.3	AMPLITUDE BALANCE			_
			8.3	qĸ	<u>p</u>
3.2.1.11	5.2.10	OUT-OF-RAND REJECTION			
		Band Peak (qb) M	IDTH(MHz)	
		WIDE: 1-286,359-1000 MHz: 39.8	`_	0.018	
		DUAL: 286.000-288.935,			
		311.465-332.935,			
		355.465-359.00 MHz: 42.9		0.00G	
		PEAK: 35.0/ dB 39.8			p
		WIDTH: /3.2 MHz		0.018 MHz	P
3.2.1.12	5.2.11	SHAFE FACTOR	_		·
		LO: /1.30 Unitless	1 28	Unitless	Ð
		HI: /1.30 Unitless		Unitless	P
7 2 1 14	5 2 12	VSUR (RETURN LOSS)	1.30	01111522	<u> </u>
3.6.1.17	J. C. IC				
		294.2-306.2,338.2-350.2 MHz			_
		DUAL S11: 7.5/ dB		dB	<u>p</u>
		DUAL S22: 7.5/ dB	8.6	d B	
4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS	~		\circ
		CENTER FREQUENCY: -8.2/0.2 MHz	$\underline{0}$	Miz	P P
		3 dB BANDWIDTH: -0.32/0.32 MHz	Δ	MHz	$\boldsymbol{\mathcal{F}}$
		INSERTION LOSS: -0.5/0.5 dB	$\overline{()}$	ď₿	P
NONE	5.2.15	DATA SHEET SUMMARY	-/2		-
		(PASS/FAIL)	P(D)	?)	
			<u> </u>	/	

PHOMON CORPORATION 7 HERMAN DRIVE

SIMSBURY, CT 86878

CAGE: 6Y858

TEL: 203-651-0211

FAX: 203-651-8618

PHONON CORPORATION FILE=2AC8F01A.DAT 15:37:45 06-23-1997 PN_193839_824 FINAL_FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL_SXX 06-23-1997 HP8753, SSCF, SSFFIX, SSREF FREQUENCY (MHZ): CENTER= 300.2 WIDTH= 39.84 INCR.= .12 SYSTEM BANDWIDTH= 12 REFERENCES: LOSS (DB) = 29.4215 PHASE (DEG) = 5401.561 DELAY (US) = 0 SLOPE (US/RHZ) = 0 RMS ERRORS: LOSS(DB)= 9.114293E-02 PHASE(DEG)= 1736.308 PLOT SCALES: LOSS 18 DB/DIV LOSS 1 DB/DIV VS. FRED 3.984 MHZ/DIV LOSS TO DB/DTV LOSS-1-DB/BIU--FREQ 3.984 MHZ/DIU FEAK: LEVEL (DB) = 29.15234 FREQ (MHZ) = 306.7387 DELAY (US) =-1.378225 SIDELORE (DB) =-48.24611 ENERGY: LEVEL (DE) = 29.59846 CENTER (MHZ) = 380.4727 WIDTH (MHZ) = 16.1445 SKEW (MHZ) =-1.292435E-82 L(DF) LO(MHZ) HI (MHZ) CTR (FHZ) WID (FIHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DR) LOX (MHZ) HIX (MHZ) -0.27 396.73868 306.73868 386.73868 8.63888 366.73868 9.00009 2.03 386.73868 305.73868 387.53558 0.50 293.59897 368.56726 13.93661 -12.47 398.57224 14.02696 293.59897 307.53558 1.09 233.27795 397.71842 300.49420 -13.38 14.43246 303.52118 14.32786 293.27795 307.71842 2.68 292.93648 387.96658 303.45148 15.63818 390.47717 14.76325 -15.29 232.93640 307.96658 3.63 292,73138 308.16768 393.44922 339.47883 15.43570 15.03417 -17.21 232,73138 308.16788 4.63 292,56427 398.31733 399, 44113 15.75372 303,47624 15.14179 -18.30292,56427 338.31799 5.03 292.42438 308.44991 392,43665 16.02454 332,47893 15.23339 -19.43232.42438 308.44871 292,29869 6.88 388.56218 300.43645 16.26331 393.47748 15.30314 232.29888 -20.81 308.56218 291.92276 10.00 398.93188 399.42731 17.00312 399.47528 15.43575 -25.54291.92276 308.93188 20.00 291.38795 369.52463 300.41629 18.21667 300.47238 15.49629 -37.79 291.38795 309.52463 39.69 298.84385 309.92573 393.37781 19.05588 398.47263 15.49942 -46.33299.84385 393.99573 48.63 230.44342 318.22372 300.33356 19.78838 300.47266 15.49981 -53.10 298.44342 316.22372 BAND (FHZ) 294.200 305.200 LMIN(DB) -0.17 LMAX (DB) 8.25 TDET (DB) 8.42 PMIN (DEG) -2975.99 FMAX (DEG) 2388.49

File: 2808B31A.DAT Passband Symmetry = 0.1 d3

5956.48

FDEL (DEG)

```
PH 100830 824 FINAL FUNCTIONAL TEMP: C PROTOFLIGHT IN DURL SXX
 86-23-1997 HP8753, SSCF, SSFFIX, SSREF
 FREQUENCY (MHZ): CENTER= 344.2 NIDTH= 39.84 INCR.= .12 SYSTEM BANDWIDTH= 12
 REFERENCES: LOSS(DE) = 29.71766 PHASE(DEG) = -5634.118 DELAY(US) = 8 SLOPE(US/MHZ) = 0
 RMS ERRORS: LOSS(DB) = .1311423 PHASE(DEG) = 1713.754
 PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FREQ 3.984 MYZ/DIV
 TOSS, LO. DB/DLA.
 LOSS-1-DB/BIU ..
FREQ 3.984 NHZ/DIV
PEAK: LEVEL (DB) = 29.44712 FRER (NHZ) = 339.9867 DELAY (US) =-1.378759 SIDELDRE (DB) =-42.30523
ENERGY: LEVEL (DB) = 29.93619 CENTER (MHZ) = 344.2584 WIDTH (MHZ) = 16.24665 SKEW (MHZ) = .1569317
 L(DE)
         LO(MHZ)
                     HI (MHZ)
                                CTR(FGZ) WID(FGZ) AV-CTR(MGZ) AV-WID(MHZ) AV-SL(DE) LOX(MHZ)
                                                                                                 HIX (MHZ)
         339.98669
                    339.98669
 -3.27
                               339.98669
                                           0.03389 339.98669
                                                                   0.00020
                                                                               60.0
                                                                                      339.98569
                                                                                                 339.98669
        337.38396
                    351.15134
  8.59
                               344.26721
                                          13.76828
                                                                  13.61221
                                                      344.17712
                                                                            -11.54
                                                                                                 351.15134
                                                                                      337.38395
  1.69
        337,14566
                    351.46109
                               344.39339
                                          14.31543
                                                      344.23267
                                                                  14.12671
                                                                             -12.88
                                                                                      337.14566
                                                                                                 351.46103
  2.03
        336.83749
                    351.83725
                               344.33737 14.99976
                                                      344.23458
                                                                             -14.93
                                                                  14.64633
                                                                                      336.83749
                                                                                                 351.83725
        336.58932
  3.00
                    352.86949 344.32341 15.48916
                                                      344.23749
                                                                  14.91914
                                                                             -16.64
                                                                                      336.58932
                                                                                                 352.06949
        335.48839 352.23689 344.32263 15.82849 344.23877
  4.03
                                                                  15.03933
                                                                            -17.61
                                                                                      335.40839
                                                                                                 352.23688
        336.26553
  5.03
                   352,39838
                              344.33197 16.13284 344.24242
                                                                  15.20487
                                                                            -19.89
                                                                                      336.26553
                                                                                                 352.39838
        336.14999 352.54013 344.34506 16.39014 344.24225
  6.00
                                                                            -21.17
                                                                  15.26926
                                                                                      336.14999
                                                                                                 352.54813
 19.09
        335.74673
                   352.92813 344.33743 17.18149 344.24677
                                                                                     335.74673
                                                                  15.38877
                                                                            -25.75
                                                                                                 352.92813
 29.63
        335.12354
                   353.57065
                              344.34711 18.44711 344.25957
                                                                  15.44525 -37.17
                                                                                      335.12354
                                                                                                 353.57865
        334.68348
                              344.37421 19.35945 344.25924
 33.60
                    354.05893
                                                                  15.44869 -44.79
                                                                                     334.68948
                                                                                                 354.65893
 43.62
        334.08875 354.26572
                              344.17322 20.16497 344.25918
                                                                  15.44898 -46.18
                                                                                     334.05075
                                                                                                 354.26572
BAND (MHZ)
           338.200 359.209
LMIN (DE)
                 -0.27
LMAX (DE)
                  9.39
LDEL (DB)
                  0.57
PMIN(DEG)
              -2936.34
PHAX (DEG)
               2349.95
FREL (PEG)
               5877.29
```

PHONON CORPORATION
FILE=2008801A.DAT 15:38:33 86-23-1997

File: ECCSRGIA.DAT Passband Symmetry = 8.1 dB

TESTED	BY: <u>Do 6</u>	ELECTRICAL TEST DATA SHE 331576-2 PHONON PART: 188824 C.A. TITLE: MCR DATE: []	. SERIAL:	B01 IME: 10500 6	L U				
TEST: F	INAL FUN NT: HF 8	CTIONAL	•	10/12/97	- ` `				
		***************************************	_						
PARA REQ.	Graph Q/atp	REQUIREMENT TITLE	Dat	A	P/F				
		OPERATING TEMPERATURE	15.9	C	р				
		CENTER FREQUENCY &			<u>-</u>				
3.2.1.4		CENTER FREQUENCY STABILITY							
		LO: 299.335/301.065 MHz		38 MHz	. <u>p</u>				
	: ,	HI: 343.335/345.065 MHz		<u>84 </u>	p				
3.2.1.5	5.2.4	3 dB RANDWIDTH:		60 MI	_	1.3			
		LO: 15/16 MHz HI: 15/16 MHz		29 MHz	<u>p</u>				
3.2.1.6	5,2,5	PASSBAND SYMPETRY	_10.4	69 MHz	<u> </u>				
0,2,1,0	0.2.0	LO: /0.5 dB	0.1	₫₿	D				
		HI: /0.5 dB	9.1		<u>p</u>				
3.2.1.7	5.2.6	PASSBAND RIPPLE			<u> </u>				
		294.2-306.2 MHz: /1.0 dB		dB	<u>p</u>				
2040		338.2-350.2 MHz: /1.0 dB	8.4	dB	р				
3.2.1.8	5.2.7	INSERTION LOSS			_	•			
		LO: 27.8/30.2 dB HI: 27.8/30.2 dB	<u>23.6</u> 23.6		P		-		
3.2.1.9	5.2.8	INSERTION LOSS VARIATION	_ 27.6	qB	- .				
OICITI',	0.2.0	LO: -0.4/0.4 dB	9.0	₫₿	D				
		HI: -0.4/0.4 dB	9.9	GF	P				
3.2.1.10	5.2.3	AMPLITUDE BALANCE							
		LO,HI: /0.5 dB	0.1	dB	<u>p</u>				
3.2.1.11	5.2.10	OUT-OF-BAND REJECTION					er en en en en en en en en en en en en en		
			AK (de)	WIDTH(MHz)			** #	52 - 400 C	:
•		WIDE: 1-286,359-1000 MHz: 4	<u>0.1</u>	8.080			٠		
	r.	311.465-332.935,		to garage for	•	P 11, 1			
			3.1	0.000		•			
			9.1 dB		р				
		WIDTH: /3.2 MHz		9.000 MHz	F				
3.2.1.12	5.2.11	SHAFE FACTOR							
		LO: /1.30 Unitless HI: /1.30 Unitless		Unitless	<u>+</u> ~				
3 2 1 14	5 2 12	HI: /1.39 Unitless VSWR (RETURN LOSS)	1.31	Unitless	F B				
J. C. I. I7	J.L.IL	294.2-386.2,338.2-358.2 MHz							
		DUAL S11: 7.5/ dB	8.7	ďB	D				
		DUAL S22: 7.5/ dB	8.6	— dB	P P				
4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS				\neg			
		CENTER FREQUENCY: -0.2/0.2 MHz		MHz	200	9)			
		3 dB BANDWIDTH: -0.32/0.32 MHz	-0.00A		₽_				
NUNE	5 2 15	INSERTION LOSS: -8.5/8.5 dB	_ 0	qB	₽_	_	- ^-	2	
NONE	J. C. 13	Data Sheet Summary (Pass/Fail)	F	60		11-A-	I PE	\ ~	
		TO TO THE STATE OF		<u>(14)</u>		ų <i>''</i>	(201	\
PHONON CO	RPORATIO	אכ		CAGE: 6Y858	_	SDAR	(970	201)
7 Herman	DRIVE			TEL: 283-651-	-0 211	•	G	~1	
SIMSBURY,	CT 0607	⁷ 8		FAX: 203-651-			I PEV (970 97-	م ۲ و	3
								ι.	~ ∪

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FILE=2AR8B01A.DAT 15:50:56 06-23-1997
FN 108833_824 FINAL_FUNCTIONAL TERP:R PROTOFLIGHT /N DUAL SXX
64-23-1997 HP:3753, SECF, SSFFIX, SSEEF
FREGUENCY (MHZ): CENTER= 300.2 WIDTH= 39.84 INCR.= .12 SYSTEM BANDWIDTH= 12
PLOT SCALES: LOSS 18 DB/DIV LOSS 1 DB/DIV VS. FRER 3.984 FYZ/DIV
MCSS IS BEADIN
 LOSS-1-DB/BIV --
FEDG 3.984 KHZZDYU
PEAK: LEVEL (DB) = 29.38634 FREG (74Z) = 305.612 DELAY (US) =-1.379663 SIDELDEE (DB) =-47.85617
EMERGY: LEVEL (DB) = 29.73923 CENTER (MAZ) = 388.3415 WIDTH (MAZ) = 16.13654 SKEW (TAZ) = 7.358988E-83
 L(DB)
        LO(MHZ)
                   HI (ISHZ)
                             CTS (M-Z)
                                        WID (MHZ) AV-CTA (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ)
                                                                                             HIX (MHZ)
                             306.61223
 -8.25
        325.61283
                   395.51283
                                         0.23309 395.61283
                                                                8.63938
                                                                          9.99
                                                                                  305.61203
                                                                                             385.61283
  0.56
        293,47699
                   307.40494
                             309.44898
                                         13,52755
                                                   322,43978
                                                               14.01402
                                                                         -12.50
                                                                                  293, 47699
                                                                                             387, 48494
                   327.58266
                                                   339.38658
  1.83
        293.16241
                              302.37152
                                         14,41824
                                                               14.31412
                                                                        -13.41
                                                                                  293.16241
                                                                                             327,58366
  2.00 232.82474
                   387,84233
                              323, 33356
                                         15.81764
                                                   336.34464
                                                               14.74785
                                                                         -15.33
                                                                                  232.62474
                                                                                             397.84239
  3.83 232.61517
                   388.64446
                              392,32983
                                                                                  232.61517
                                         15.42929
                                                   322.34533
                                                               15.01770
                                                                         -17.26
                                                                                             388.24446
                              300.32202
  4.08 232.45835
                   308.19373
                                         15.74338
                                                   309.34616
                                                               15.12464
                                                                         -18.35
                                                                                  232.45035
                                                                                             309.19373
  5.20
                   333.32465
       292.31171
                              309.31818
                                         16.01234
                                                   360.34607
                                                                         -19.55
                                                               15.21391
                                                                                  292,31171
                                                                                             398.32465
  6.63
        292.18546
                   383, 43811
                              303.31177
                                         16.25266
                                                   323.34578
                                                                         -20.85
                                                                                  292.18546
                                                               15.28441
                                                                                             328, 43811
 12.93
        291.80917
                   398.89884
                              392, 39922
                                          16.99955
                                                               15.41554
                                                   399.34384
                                                                         -25.61
                                                                                  231.80317
                                                                                             308.89384
 22.83
        231.13211
                              333.29851
                   339.48512
                                         18.21381
                                                   323.34119
                                                               15.47511
                                                                         -37.86
                                                                                  231, 13211
                                                                                             289.48512
 30.23
        299.73625
                   329.76104
                              389.25954
                                         19.84279
                                                   393.34143
                                                               15,47818
                                                                         -46.28
                                                                                  292,73825
                                                                                             329.78104
 48.69
        298.31467
                   318.12796
                              383.22131
                                         19.81329
                                                   383.34146
                                                               15.47857 -52.78 292.31467
                                                                                             318.12735
BAND (MHZ)
           294.233 386.268
LMIN(DB)
                -8.17
LUAX (DS)
                 8.25
LDEL (DB)
                 8,42
FMER (DEG)
              -2377.23
FRER (CES)
              2961.66
              5959.12
FREL (DEG)
```

a de la confedencia de la finalmenta de la constitución de la filador de la filador de la filador de la filador

PHONON CORPORATION

File: BARES01A.DAT Passband Symmetry = 8.1 dB

PHONON CORPORATION FILE=2CR8R01A.DAT 15:51:51 06-23-1997 PH_103838_824 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT IN DUAL SXX 06-23-1997 HP8753, SSCF, SSFFIX, SSREF FREQUENCY (MHZ): CENTER= 344.2 WIDTH= 39.84 INCR.= .12 SYSTEM FRANCHIDTH= 12 FMS ERRORS: LOSS(DB)= .1323827 PMASE(DEG)= 1714.589 PLOT SCALES: LOSS 10 DE/DIV LOSS 1 DE/DIV VS. FRED 3.994 MHZ/DIV LOSS TO FRADIU. PIG/40-1-5507 iven a 1984 mizzehu PEAK: LEVEL(DB) = 29.36111 FREQ(MHZ) = 339.8394 DELAY(US) =-1.367148 SIDELOSE(DB) =-42.59253 LO(EHZ) HI (MHZ) L(D) CTR (MHZ) WID (MHZ) AV-CIR (MHZ) AV-WID (MHZ) AV-SL (DB) LCX (MHZ) HIX(KHZ) -8.27 339, 83942 339,83942 339.83942 339.83942 0.03833 6.03000 6.69 339.83942 339.83942 0.53 337.35111 351,63169 344.19641 13.67056 13,58933 344.11145 -11.32 337.35111 351.83159 337,03318 351.33170 1.22 344.18542 14.23251 244,11398 14, 13231 -12,93 337.03918 351.33173 2.53 335.71653 351.71146 344.21375 14.99542 344.11575 14.64943 -14.95335.71663 351.71146 336.45978 3.09 351,93875 344.29422 15.46936 344.11847 14.92055 -15.67 336, 46978 351.93875 335.28769 4.83 352,18528 344.19696 15.81851 344.11920 15.23167 -17.64 336.28769 352,10520 5.99 336.14133 352,27209 344.29678 16.13098 344.12012 15.28484 -19.92 336.14139 352,27203 335.02435 6.03 352.41649 344.21738 16.38695 344.12152 -21.22 335.82435 15.26916 352,41949 335.62287 10.93 352.79425 344.22815 344,12476 335.62227 17.17218 15.38723 -25.73 352.79425 23.63 334.99844 353,43326 344.21555 344.12666 18.43451 15.44201 -36.64 334.99844 353.43326 39.69 334.55435 353.92563 344.23999 19.37128 344.12704 15.44667 -44.55 334.55435 353,92563 49.93 333.91367 354.12023 344.916.85 23, 20636 344.12693 15.44887 -45.34 333,91357 354,12323 EAND (MHZ) 338.223 353.288 LMIN(DB) -3.26 LFAX (DB) 9.28 LDEL (DB) 9.54 F:::1::(0E3) -2772.33

in also presentations that the second about the first and the first and the first and also be a second in

/SA

File: ECRESSIA.DAT Passtand Symmetry = 0.1 dB

2743.10

5101.54

PERMITED)

PDEL (DES)

PHONON CORPORATION FILE=2ER8E01A.DAT 15:52:43 06-23-1997 FN_100930_624 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N WIDE_521 85-23-1997 HP8753, SSREF, SSREF FORE TO TENETA ... 拉加 29.9 海岛研以] FEAK: LEVEL(DB) = 29.31631 FREQ(MMZ) = 339.846 DELAY(US) =-1.876621 SIDELOSE(DB) =-43.34791 L (DB) HI (E-Z) CTR (FHZ) WID (TWZ) AV-CTR (FHZ) AV-NID (THZ) AV-SL (DB) LOX (FHZ) HIX (THZ) -8.28 339.84581 339.84581 339.84581 9.02223 339.84661 9, 26933 0.63 339.84581 339.84581 C.50 337.35971 351.00311 344.10140 13.64340 344.10959 1.03 337.03049 351.32611 344.17828 14.23552 344.11243 13.37683 -17.49 293.47250 351.00311 14.93394 -17.66 293.15131 351.32611 2.53 324.73175 351.79532 344.21854 14.97357 344.18112 14.53269 -17.77 232.68972 351.70532 3.63 335.47388 351.92853 344.28128 15.45465 344.11752 14.86719 -17.85 292.61157 351.92853 3.60 335.47388 351.92853 344.20120 15.45465 344.11752 14.86719 -17.85 292.61157 351.92853 4.09 335.6959 352.09735 344.19641 15.80185 344.11752 14.86719 -17.86 292.44571 352.09735 5.08 336.14719 352.26944 344.20931 16.12225 344.11816 15.83118 -17.91 292.38588 352.26944 6.09 335.02878 352.40741 344.21808 16.37853 344.12833 15.15104 -17.94 292.18097 352.40741 18.09 335.02561 352.79088 344.23013 17.16507 344.12402 15.27768 -17.97 291.80945 352.79088 20.00 335.02113 353.42972 344.21542 18.42859 344.12616 15.32250 -17.99 291.19333 253.42972 23.60 334.55716 353.93280 344.24520 19.37564 344.12619 15.32534 -17.97 290.31369 354.10023 40.02 333.91321 354.10323 344.01093 20.19577 344.12622 15.32551 -17.97 290.31369

1.669 285.633 359.698 1989.688 FAND (FHZ) LMIN(DB) 43.43 -0.26 40.97 LMAX (DE) 87.73 77.49 71.33 39.35 LDSL(DB) 77.77 31.26 7512,23 -8565,64 -8442,52 9000,00 0000,63 9000,00 POIN (DES) FTG/(C20) PEEL (IES) 2825.77 16978.13 18439.52

FILE: SER8BSIA.DAT Out-of-band Rejection: PEAK= 40.1 GB WIDTH= 8.000 MHz

FILE=2FR8B81A.DAT 15:53:05 06-23-1997 PN_100830_624 FINAL_FUNCTIONAL TEXP:R PROTOFLIGHT /N DURL SXX 86-23-1997 HF'8753, SSREF, SSREF FREQUENCY (N=Z): CENTER= 322.2 WIDTH= 84.% INCR.= .12 SYSTEM BENDWIDTH= 85 ROWS ERRORS: LOSS(DE) = 24.74445 MHRSE(DES) = 1573.233 FLOT SCALES: LOSS 10 DE/DIN NS. FREE 8.496 MHZ/IIV LOSS TO IDITO FRED 8.696 MIZZDIU PEAK: LEVEL(DB)= 29.2958 FREQ(MMZ)= 335.6145 DELAY(US)= 7.362986E-82 SIDELOBE(DB)=-42.34831 L (DE) LO (11/2) HI (MHZ) CTR (ITHZ) WID (THE) AV-CTR (THE) AV-WID (THE) AV-SL (DE) LOX (THE) HIX (KHZ) -8.38 385.61453 386.61453 386.61453 8.22228 335.61453 395.61453 395.61453 0.02003 0.03 0.59293.45941 387.41647 322.43793 -6.24 233.45941 13.95788 330.42188 14.02406 350.99982 1.00 293,14554 367,58993 14.44437 388.37256 382, 35774 14.52631 -6.34 293.14554 351.31345 2.09 292.81180 307.85916 302.23299 15.83336 302.27957 232.81123 14.87023 -6.43 351,72151 368.65972 398.32968 3.63 232.62854 15.44209 300.36578 15.14217 -6.45 232.69864 351.93451 303.19394 399.32172 4.03 232,44452 15.75443 300.36301 15.24969 -6.46 232.44452 352.03955 5.63232,30515 333.32864 382.31738 15.37751 -6.47 292.38515 352.26767 6.83292,18130 398.44223 -E.48 329.31177 15.44169 292.18130 352,48631 19.63 231.88718 333.81161 323.32935 15.55632 -6.45 291.83710 352,73117 23.63 291.19131 309.40543 398.29889 15.62493 €.43 291,19131 353.43152 32.66 230.73657 383.78259 388, 25958 19,64463 388.34145 15.69716 -5.34 238.73657 353, 92477 42,62 293.31256 312.12622 320,21939 333.34143 15.65742 -6.29 292.31256 19.81388 354.13248 PAND (RHZ) 234.228 336.239 338.288 359.288 LMIN(DB) -0.19 -2.32 -2.27 LYAX (DB) 0.21 65.12 0.34 LDEL (DB) 9.49 65.41 8.61 FT14(DEG) -2021.43 -3014.84 -421.95 F. . (123) 783.35 3225.75 2236.59 PERLICES) 2765.35 6239.99 2738.94 FILE: EFRERBIA.DAT Out-of-band Rejection: PEAK= 42.1 dB WIDTH= 0.000 MHz

PHONON CORPORATION

FYICKON CORPORATION

FILE: 2FR8EG1A.DAT (+SSCF)

PM_188838_824 FINAL_FUNCTIONAL TEST:R PROTOFLIGHT AN DUAL_SXX

Burgaryan and a subservation of the control of the

06-23-1997 HP8753, SSREF, SSREF, SSCF SEFERENCES: LOSS(DB)= 29.59431 FMASE(DEG)= -138.6753 DELAY(US)= .7281239 SLCFE(US/KHZ)= 8

BANDRASS CHARACTERISTICS MEASUREMENT

REQUENCY (M-Z)	LOSS (DR)	PHASE (DEG
285.488	62.85	1256.4
289.688	64.03	1553.83
232.768	2.23	1110.18
296.449	-0 .10	246.03
388.128	-0.12	-616.69
393.899	9.18	-1479.31
307.450	8.67	-2349.89
311.160	51.28	-2745.53
314.849	57.09	-1823.83
318.529	59.42	-825.64
322.209	49.79	138.68
325 . & 8	47.67	1114.91
329.569	53.43	2369.95
333.249	45.93	3829.93
336.923	1.27	2594.71
349.698	-0.17	1755.13
344.280	-8.6 5	916.21
347.968	0.11	76.71
351.649	1.75	-758.59
355.320	46.88	-1254.82
359.083	43.69	-318.81

AEKOJET !	PART: 13	331576-2 PHONON PART: 180824 SERIAL: <u>R81</u> CA TITLE: <u>UGR</u> DATE: 6 2497 TIME: 10:00 AV	Lq.
TEST: FI	NAL FUNC	TIGHT	ı
EQUIPMEN	T: HP 87	753D SERIAL: 3418A87982 CAL DUE: 18/12/97	
	ુ ક્ર≎ 34	178A SERIAL: 2136A03127 CAL DUE: 7/8/97	
		· ·	P/F
REQ.		ACCOUNTAINS TO CO	E)
		OPERATING TEMPERATURE 35.6 C CENTER FREQUENCY &	<u>tı</u>
3.2.1.3	5.2.3	CENTER FREQUENCY STABILITY	
3.6.1.7		LO: 299.335/301.065 MHz 300.217_ MHz	Þ
	٠.	HI: 343.335/345.065 MHz 344.087 MHz	р Р
3.2.1.5	5.2.4	3 dB RANDWIDTH:	
		LO: 15/16 MHz 15.422 MHz	P
		LO: 15/16 MHz	P P
3.2.1.6	5.2.5	EARCHAIR CYANGETOV	
		LO: /8.5 dB 0.8 dB	P P
		HI: /0.5 dB 0.1 dB	P
3.2.1.7	5.2.6	PASSRAND RIPPLE	_
3		294.2-305.2 MHz: /1.0 dB	P P
		338.2-350.2 MHz: /1.0 dB <u>0.4</u> dB	<u> </u>
3.2.1.8	5.2.7	INSERTION LOSS	
		LO: 27.8/38.2 dB 29.8 dB	P P
2210	504	HI: 27.8/39.2 dB INSERTION LOSS VARIATION	<u> </u>
3.6.1.7	J.C.0		D
		HI • ~ U A / U A R	P P
3,2,1,19	5.2.9	ATFLITUDE BALANCE	<u>. </u>
0.011.10		LO, HI: /8.5 dB 8.1 dB	p
3.2.1.11	5.2.10	OUT-OF-RAND REJECTION	
		RAND PEAK (db) WIDTH (MHz)	+
		WIDE: 1-286,359-1000 MHz: 39.7 0.064	
		DUAL: 286.000-288.935,	
		311.465-332.935,	•
		355.465-359.80 MHz: <u>42.8</u> <u>0.889</u>	_
		FEAK: 35.0/ dB 33.7 dB	P
22112	E 2 11		<u>F'</u>
3.2.1.12	2.5.11	SHAPE FACTOR LO: /1.30 Unitless 1.28 Unitless	n
		HI: /1.30 Unitless 1.31 Unitless	F 1/2
3.2.1.14	5, 2, 12	VSWR (RETURN LOSS)	
0.2.1.1	0,2,12	294.2-306.2,338.2-350.2 MHz	
		•	Þ
		DUAL S22: 7.5/ dB 8.7 dB	P
4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS	_
		CENTER FREQUENCY: -0.2/0.2 MHz / MHz	
		3 dB RANDWIDTH: -0.32/0.32 MHz O MHz	<u> </u>
L Maria de Pr		INSERTION LOSS: -0.5/8.5 dB	4
NONE	5.2.15	DATA SHEET SUMMARY	
		(PASS/FAIL) (DP)	

ELECTRICAL TEST DATA SHEET

PHONON CORPORATION 7 HERMAN DRIVE SIMSBURY, CT 06878 CAGE: 6Y858 TEL: 203-651-0211 FAX: 203-651-8618 U-A-I PER SDAR (97-02-01) 977-034

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FILE=28HSB318.DST 16:84:38 86-23-1997
PH 188830 884 FINAL FUNCTIONAL TERRITORIAL INTO SXX
25-23-1997 HABTER, SECF, SEFFIX, SECUT
FREQUENCY (NAZ): CENTER= 382.2 | WINTH= 29.84 | INCR.= .12 | SYSTEM PROMITTH= 12
FLOT SCALES: LOSS 10 DB/DIV LOSS 1 DP/DIV VS. FRED 3.984 MHZ/DIV
TOSS, LO. DENDLA.
LOSS 4 - DB/BIV
FREG 3.984 MYZZENU
PERK: LEVEL(DB) = 29.52263 FREG(MAZ) = 235.4863 DELAY(US) =-1.381835 SIDELORE(DB) =-47.67892
EMERGY: LEVEL (DP) = 29.93823 CENTER (MHZ) = 399.2111 WIDTH (MHZ) = 16.12982 SKEW (MHZ) = 3.975699E-62
L (DB)
        LO(MHZ)
                    HI (MHZ)
                               CTR (EVZ)
                                          WID (FS-IZ) RV-CTR (FS-IZ) RV-WID (FS-IZ) RV-SL (FY) LOX (FS-IZ)
                                                                                                HIX (MHZ)
 -8.23
        396, 49539
                   386,48638
                               303.43532
                                            8.03333
                                                     335.48538
                                                                  8.23330
                                                                              0.09
                                                                                     335.45538
                                                                                                336.48638
       293,35333
                   337, 28436
                               333,31655
                                           13,93137
                                                     399.39396
                                                                  14,00031
                                                                            -12.51
                                                                                     233.35363
                                                                                                387, 28435
        293.04807
                   327,46216
                               322.25513
                                           14.41429
                                                     399,25927
                                                                 14.30%1
                                                                            -13.43
                                                                                    293.84807
                                                                                                327,46216
  2.63
       292.76877
                   387.72785
                               300.21798
                                           15.01628
                                                     309.20779
                                                                  14.74258
                                                                            -15.35
                                                                                    292.76977
                                                                                                307.72785
  3.02
        232.59547
                   397.92841
                               322,21744
                                           15.42134
                                                     302.21030
                                                                  15.21175
                                                                            -17.38
                                                                                    232,58647
                                                                                                327.92841
  4.03
        292, 34235
                   388.87825
                               393,21939
                                           15.73598
                                                     328.21148
                                                                  15.11813
                                                                            -18.33
                                                                                     292.34235
                                                                                                388. 27825
  5.93
        232,28468
                   303.23341
                               323.22733
                                           16.02473
                                                     308.21201
                                                                  15.20301
                                                                            -12.69
                                                                                     232,20458
                                                                                                308.20941
 6.93
        292,67947
                   388.32783
                               200, 20123
                                           15.24353
                                                                            -58.55
                                                                                     232,07947
                                                     388.21231
                                                                  15.27593
                                                                                                232, 32323
        231.70237
 10.63
                   388, 69488
                               333.19849
                                           16.99123
                                                     339.21219
                                                                  15.42571
                                                                            -25.69
                                                                                     231.78297
                                                                                                300.69422
 23.83
        291.88459
                   333.28888
                               333.13674
                                           15.22428
                                                     383.21136
                                                                 15.46488
                                                                            -36.67
                                                                                     291.63459
                                                                                                303.28398
 39.00
        299.62744
                                                                 15.48827
                                                                            -45.35
                   399.65979
                               392.14362
                                           19,93235
                                                     399.21193
                                                                                    230.62744
                                                                                                393.65979
 43.33
        298.28156
                   318.01443
                               399.18833
                                           19.81277
                                                     398.21103
                                                                 15, 46865
                                                                            -52.78
                                                                                     298, 28155
                                                                                                312.01443
PAR MER
LEEK(CC)
                  5.43
PMIN(DEG)
              -2378.74
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opposition to the programment of the contribution of the contribut

PHONON CORPORATION

Fila: 28425919.DAT

Passband Symmetry = 0.0 dB

7:3

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PHONON CORPORATION
FILE=20H00010.DAT 16:00:00 00-07-1007
PN 102338 824 FINAL FUNCTIONAL TEMP:H PROTOFLIGHT /N DUAL_SXX
86-23-1997 KP8753, SSCF, SSFFIX, SSREF
FREQUENCY (MMZ): CENTER= 344.2 WIDTH= 39.84 INCR.= .12 SYSTEM BANDWIDTH= 12
FLOT SCREES: LOSS 10 DE/DIV LOSS 1 DE/DIV VS. FRER 3.984 MMZ/DIV
FORE, LE, BENDLA,
                                                                       FREQ 3.984 MIZ/PIU
PEAK: LEVEL (DB) = 29.38262 FREQ(DFZ) = 339.6675 DELAY(US) =-1.374509 SIDELGGE(DB) =-41.71743
L(DP)
                                       WID (MEZ) AV-CTR (MEZ) AV-WID (MEZ) AV-SL (DR) LOX (MHZ)
                                                                                         HIX (MHZ)
        LO (MHZ)
                   HI (HZ)
                             CTR (MHZ)
                                        8.23333
                                                             6.99933
                                                                       9.09
                                                                               339.68753
                                                                                         339.68753
-9.23
       339.65753
                  339.68753
                            339.69753
                                                 339.62753
 9.53
       337.26813
                  358,92456
                             344,09631
                                        13.65646
                                                  344.84525
                                                             13.62214
                                                                       -11.59
                                                                               337.26310
                                                                                         359.92459
                                                  343.99579
 1.00
       335.93271
                  351.21298
                             344.07285
                                        14.26927
                                                             14.13539
                                                                       -12.92
                                                                               336.93271
                                                                                          351,21298
 2.63
       335.68349
                  351.59113
                             344.02729
                                                  343.53918
                                                             14.65359
                                                                       -14.99
                                                                               336.69349
                                                                                         351.59113
                                        14.98764
 3.68
       336.35959
                  351.81372
                             344.09661
                                        15.45422
                                                  344.02256
                                                             14.92311
                                                                       -16.72
                                                                               336.35950
                                                                                         351.81372
                                                  344.00339
                                                                               335.17670
                                                                                         351.98389
 4.28
        335.17678
                  351.95329
                             344.27338
                                        15.88548
                                                             15,03333
                                                                       -17.68
                                                                       -19.97
 5.02
        336.62699
                  352.15979
                                                  344.02458
                                                             15.23533
                                                                               335.02609
                                                                                          352.15272
                             344.68835
                                        16.12459
                                                             15,26919
                                                                               235,96565
                                                                                         352,20598
                                                                       -21.27
 6.23
        335,98382
                  352,28598
                             344.83598
                                        16.37795
                                                  344,23535
                                                                               335.56571
                                        17.16211
                                                             15.32573
                                                                       -25.84
                                                                                          352,66782
10.00
        335.56571
                  352,66782
                             344.08676
                                                  344,82939
       334.88885
23.09
                  353,39510
                             344 60003
                                        18,42453
                                                  244,01093
                                                             15,43353
                                                                       -35.65
                                                                               234.89955
                                                                                          353, 32518
33.23
       334.42715
                  353.79999
                             344.11359
                                        19.37283
                                                  344.01033
                                                             15.44435
                                                                       -43.82
                                                                               334.42715
                                                                                          352.79933
43.53
       333.77643
                  353,59374
                                                             15.44467
                                                                       -45.54
                                                                               332,77549
                                                                                          353.99374
                             343.88597
                                        23.21735
                                                  344,81899
1812 (1912)
1918 (13)
1988 (13)
        333.222
                  253,233
               -5.27
5.27
LIEL (IE)
                6.55
PHIN (DEG)
             -2938.74
              2344.54
```

Passband Sympatry = 8.1 dB

File: ECHSPOIA.DAT

<u> The selection of the selections are the first through the selection of the contract of the selection of the contract of the </u>

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Channel 13 Bandpass Filter

SAW Filter (S/N: 1331576-3, S/N: B01)

PLECTRICAL TEST DATA SHEET

AFROJET PART: 1331576-3	PHANCH FORT: 122825	SERIAL:P21
PEROTET PART: 1331576-3 TESTED BY: Programmes TITLE	EL LA DE MA DETEROL	2/97 TIME: 1:30 PM
TEST: FINAL FUNCTIONAL	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
FRITESTI NO 8752D SE	TKIAL:3416987982	C4L DUE:10/12/97
	TO -2136023127	COI ME: 7/8/37

PARAGE		PEQUIPMENT TITLE	DATA		P/F	
rea.	CASTS				_	
3.2.1.1	5.2.1	OPERATING TEMPERATURE	<u>-5.1</u>	C	<u> p</u>	
3.2.1.3	5.2.3	CENTER FREILIENDY 3				
3.2.1.4		CENTER FREQUENCY STAPILITY				
		LO: 312.035/312.355 MHz	312, 12	3 Muz	<u> </u>	
		MI: 332.835/332.355 MMz	332.10	S XXX	<u> </u>	
7215	5,2,4	3 de Banduidth:				
		LD: 7.8/8.8 f24z	7, 83	2_ 12tz	<u>p</u>	
		HI: 7.8/8.8 HHz	7.85	5 1742	P	
3.2.1.6	5 2 5	PASSPAND SYNCETRY			<u> </u>	
3.2.1.5	5.5.5	LO: /0.5 dB	6.2	dB	D	
			9.2	_ 13	P P	
		HI: /0.5 dB	_ 2.2	³⁵	<u> </u>	
3.2.1.7	5.2.5	PASSBAND RIPPLE		25	_	
		339.2-315.2 MHz: /1.0 dB	<u>B.4</u>	— ç <u>¥</u>	P	
		329.2-335.2 MAz: /1.0 dB	2.3	dB	<u> </u>	
3.2.1.9	5.2.7	INSERTION LOSS			_	
		LD: 27.8/38.2 dB	28.2	gB	<u>p</u>	
		HI: 27.8/32.2 dB	27.9	dB	<u> </u>	
3.2.1.9	5.2.8	INSERTION LOSS VARIATION				
		LO: -3.4/3.4 dB	-8.2	63	<u>p</u>	
		HI: -0.4/0.4 dB	-8.3	d3	<u>₽</u>	
3,2,1,19	5, 2, 9	ATPLITUDE BALANCE				
		LO.HI: /0.5 dB	2.4	dB	<u>p</u>	
3.2.1.11	5.2.18	OUT-OF-BAND REVECTION		_		
		FAND	PERK (dr)	MILLH (AHZ)		
		UIDE: 1-393,342-1939 MHz:	49.5	9.939_		
		PUPL: 393.002-305.935,				
		317.565-326.625,				
		327.565-342.92 MHz:	<u>40.0</u>	9,829		
		FEAK: 25.0/ 68	49,6 33		Þ	
		NIOTE: /1.5 MHz		6.003 7Hz	Ē,	
2 2 1 12	F 9 11	SYSTE FACTOR			<u> </u>	
01212122		10: /1.39 Unitless	1,28	Unitless	D.	
		Mi: /1.38 Unitless	1 27	thitless	<u>P</u>	
2 2 1 14	E 2 42	NEWS (KETURN LOSS)			-	
2:0.2:25	₩. E + LI	- 329.2-315.2,329.2-335.2 MH	-			
		Mid 811: 7.5/ (3	12.3	ćB	n	
			7.8	— 58	<u>0</u>	
		DUM 522: 7.5/ dB	_ /.8	— ca	<u> </u>	
4.0.2	5.2.14	LIMITED FUNCTIONAL TESTS	A	Len 1	0	,
		CENTER FREQUENCY: -0.1/0.1		MLz	*	R
		3 CB BRATHIDTH: -0.15/2.16		_ <u>181</u> 2	4	1
		INSERTION LOSS: -8.5/8.5 d	§	dB	#	
KONE	5.2.15	DATA SHEET SUIMARY		(60)	-	
		(PASS/FAIL)		<u>(</u> 0P)		

PHONON CORPORATION 7 METHON DAINE SIMEDURY, OT SOETS CASE: 6Y853 TEL: 803-551-8211 FAX: 203-651-8818

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PHONON CORPORATION FILE=3AC81818.DAT 18:21:48 83-84-1997 PH 189832 825 FINAL_FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL_SXX 83-63-1997 HF-8753, SSCF, SSFFIX, SSREF FREDUENCY (MHZ): CENTER= 312.2 WIDTH= 29 INCR.= .1 SYSTEM RANDWIDTH= 6 REFERENCES: LOSS (DB) = 28.23768 PHASE (DEG) = 5249.265 DELAY (US) = 8 SLOPE (US/MPZ) = 8 FMS ERRORS: LOSS (DP) = .1182323 FMASE (DEG) = 1647.864 FLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FREQ 2.9 MHZ/DIV TOSS. 18. Landin. LOSS-1-DB/BIV--FREQ 2.9 MHZ/DIV PERK: LEVEL (DB) = 27.97474 FREQ (MHZ) = 315.3184 DELAY (US) =-2.689581 SIDELOBE (DB) =-47.69858 ENERGY: LEVEL (DB) = 28.42208 CENTER (MHZ) = 312.2286 WIDTH (MHZ) = 8.20275 SXEW (MHZ) = -6.799255E-02 WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DE) LOX (MHZ) HI (MHZ) CTR (MHZ) HIX(MHZ) L(DH) LO(M:Z) -0.26 315.31842 315.31042 315.31642 0.03929 315.31042 8,09399 0.09315.31942 315.31842 312,23413 315.76852 7.85897 312.24326 7,88859 -14.55 308.69365 315.76862 8.58 388.69%5 308.56216 398.56216 312.21191 -15.57 315.86163 315.86163 7.23347 312.24393 7.25783 1.00 388.38684 316.88438 316.88438 312, 19556 7.61746 312.24258 7.53538 -18.18388.38684 2.00 316.10617 312.18994 7.83243 312.24966 7.63387 -19.82 388, 27374 316.19617 325.27374 3.09 316, 18518 312.18573 7.93887 312.21878 7.68146 -28.68 309.18631 316.18518 338, 18631 4.68 316.24915 312.18164 8.13498 312.23834 7.71933 -21.68 308.11417 316.24915 308.11417 5.00 7.77581 -23.85 388.84724 316.31655 316.31055 312.17889 8.26331 312.23593 6.68 388.84724 316.50394 7,83758 -23.27 367.84818 327.84818 316.50394 312.17686 8.65576 312.23187 10.00 397.51955 316.88493 316.88493 7.85393 -48.39 23.03 307.51965 312.16229 9.28528 312.22916 307.31522 316.98329 367.31522 316.98389 312.14917 9,66788 312,22879 7.86149 -47.47 30.68 387.18834 317.11783 312.10987 18.81749 312.22867 7.86161 -51.33 317.11783 43.60 307.10834 RAND (MHZ) 309.200 315.200 TRIN(DB) -8.24 LMAX (DE) 9.21 TDET (DB) 0.45 -2866.73 PMIN(DEG)

File: 3AC6F810.DAT Passband Symmetry = 8.2 dB

2934.29

5718.93

PFIAX (DEG)

FDEL (DEG)

PHONON CORPORATION FILE=3CC8F010.DAT 10:22:36 03-04-1997 PN_108832_825 FINAL_FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL_SXX 83-83-1997 HF:8753, SSCF, SSFF IX, SSREF FREQUENCY (MHZ): CENTER= 332.2 WIDTH= 29 INCR.= .1 SYSTEM BONDWIDTH= 6 RMS ERRORS: LOSS(DB)= 9.399569E-B2 PHASE(DEG)= 1628.18 FLOT SCALES: LOSS 18 DR/DIV LOSS 1 DB/DIV VS. FREQ 2.9 MHZ/DIV MOSS IS FEADIN LOSS-1-DB/FIV --FREQ 2.9 MHZ/DIV FEAK: LEVEL (DB) = 27.72747 FRER (MHZ) = 332.9545 DELAY (US) =-2.655912 SIDELORE (DB) =-48.31363 ENERGY: LEVEL (DB) = 28.85185 CENTER (MMZ) = 332.129 WIDTH (MMZ) = 8.243187 SKEW (MMZ) = -.0455194 WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ) HIX (MHZ) HI (MHZ) CTR(ISIZ) L(DE) LO(MHZ) 332.95447 8.00393 6. 69 332.95447 9.**9**9999 332.95447 -2.15 332,95447 332.95447 332.95447 7.09315 -14.28 328.58349 335,68970 335.68978 332.09961 7.18021 332, 12277 328.50349 9.59 328,41077 335,79159 335.79150 7.38074 332.12219 7.27531 -15.30 332, 10114 328.41077 1.09 328.26715 335.94351 7.55869 -17.89328, 26715 335.94351 332, 19535 7.67636 332,12222 2.68 335.05127 -19.52 328.16492 332,12286 7.67332 328.16432 336.05127 332.16863 7.88635 3.00 336.13962 328.08557 8.84504 332, 12378 7.76557 -21.43 328.68557 336.13952 332, 10889 4.88 7.79735 -22.43 328.01987 336.20139 336.20139 332.11953 8.18152 332.14841 5.63 328.01987 7.82664 327.96487 336.26389 8.23822 332.12491 -23.63 332.11398 6.00 327.95487 336.26389 336.45432 7.89201 -29.14 327.77777 8.67654 332.12729 336.45432 332.11693 19.89 327.77777 -40.76 327.48841 336.75992 7.31522 9.27951 332.12885 28.00 327, 48841 335,75992 332.12018 -50.77 327.27280 336.95255 332.12900 7.91672 327.27289 335,95255 332.11267 9.67975 39.99 7.91682 -54.64 327.11581 337.11526 337.11526 332.11554 9.99945 332,12988 48.60 327, 11591 329.200 335.200 FAND (MHZ) -8.15TWIH (DE) LMAX (DE) 8.29 8.35 LDEL (DH) FMIN (DEG) -2773.68 PMAX (DEG) 2868.30

PPEL (DEG) 5541.93 File: 30058216.DAT Passband Sympathy = 8.2 dB

j.

ELECTRICAL TEST DATA SHEET

ELECTRICAL TEST DATA SMEET									
AERQJET I	የልንታ 13								
TESTED BY: 11 TITLE: 12 Mg DATE: 23 97 TIME: 1130 PM									
TEST: FIND PHETIDIA									
EGUIDMEN			CQL DUE:10/12/97						
ENGTHIER									
HP 3478A SERIAL: 2135A93127 CAL CUE: 7/8/97									
			2474	5.5					
Paras		REQUIREMENT TITLE	DETA	P/F					
REA.	Q/ATP								
3.2.1.1		OPERATING TEMPERATURE	<u>15.2</u> C	D					
3.2.1.3	5.2.3	CENTER FREQUENCY &							
2.2.1.4		CENTER FREGUENCY STRPILITY	ľ						
		LO: 312.035/312.365 MHz	312.225 PHz	P					
		HI: 332.835/332.365 MHz	332, 126 Fetz	P P					
3215	524	3 de Bandwidth:	5-21-25						
3,2,1,3	21217	LO: 7.8/8.8 MHz	7 077 MU-	ח					
		-	7.833 MHz	<u>p</u>					
		HI: 7.8/9.8 MHz	7.989 THz	<u></u>					
3.2.1.6	5.2.5	PASSBAUD SYMMETRY		_					
		LO: /0.5 d3	<u>e.3</u> de	<u> P</u>					
		HI: /2.5 dB	0.3 d3	p p					
3.2.1.7	5.2.6	PASSBAND RIPPLE							
		209.2-315.2 MHz: /1.0 d3	<u>0,4</u> dB	Þ					
		329.2-335.2 MHz: /1.8 dB	9.3 dB	<u>b</u>					
3, 2, 1, 8	527	INSERTION LOSS		-					
C. C. 1. 0	3. 5. 1	LD: 27.8/38.2 d3	28.4 (5	n					
				<u>t,</u>					
2040		HI: 27.6/32.2 d8	28,2 d¥	<u> </u>					
3.2.1.9	5.2.5	INSERTION LOSS VARIATION		_					
		LC: -8.4/0.4 dB	<u>0.0</u> dB	p					
		HI: -9.4/0.4 dB	<u>6.9</u> dB	<u> </u>					
3.2.1.12	5.2.3	ANDLITUDE PALONCE							
		LO, HI: /0.5 dB	_ 6, 2	P					
3,2,1,11	5.2.13	OUT-OF-BAND REJECTION							
		BAND	FERK(dE) HIDTH(HEE)						
		WIDE: 1-303,342-1800 MHz:	49.1 8.823						
		DUAL: 323.000-305.035,							
		217.565-326.835	40.0						
		337.565-342.92 164:	49.2 2.838	_					
		PEGK: 35.0/ dB	<u>48.1</u>	<u>p</u>					
		WIDTH: /1.5 MHz	<u> </u>	<u> 5</u>					
3.2.1.12	5.2.11	SHAPE FACTOR							
		LO: /1.30 Unitless	1.28 Unitless						
		HI: /1.38 Unitless	1,27 Unitless	<u> </u>					
7.2.1.14	5, 2, 12	VELTO (RETURN LOSS)							
		309.2-315.2,329.2-335.2 ##	73						
		DUAL S11: 7.5/ (3		rı.					
		DUST S22: 7.5/ CB	10,4 dp	<u>p</u>					
			<u> </u>	<u>''</u>					
4.0.2	5, 2, 14	LIMITED FUNCTIONAL TESTS		0					
		CENTER FREQUENCY: -8.1/8.1		* 3					
		3 de Bastwilth: -0.16/0.16		P (DY)					
		INSERTION LOSS: -8.5/9.5 d	∃ <u>−0.1</u> :3	P					
NONE	5.2.15	DATA SHEET SUMMARY							
		(PASS/FAIL)	P (Ol)						
									
PHONON CORPORATION CASE: EY858									
7 455434		•.•	TEL: 223-651-	7211					
		73	FAY: 283-651-						
wastawast g	SIMSSURY, CT 01673 FAY: 282-651-8618								

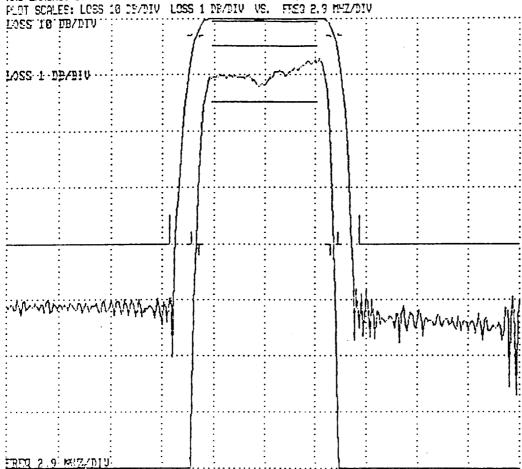
PHONON CORPORATION FILE=3AREB010.DAT 10:31:55 03-04-1997

FM 188832 825 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT AN DUAL SXX

03-03-1997 HF-0753, SSCF, SSFFIX, SSREF

FREQUENCY (MHZ): CENTER= 312.2 WIDTH= 29 INCR.= .1 SYSTEM RANDWIDTH= 6
REFERENCES: LOSS(DB)= 28.48862 PHRSE(DEG)= 5638.888 PELAY(US)= 8 SLOPE(US/TS-Z)= 0

RMS ERRORS: LOSS (DB) = .1295405 PHOSE (DEG) = 1647.72



FEAK: LEVEL (DF) = 28.14181 FREQ (MHZ) = 315.3976 DELAY (US) =-2.698768 SIDELDRE (DB) =-48.23971

	こちゃこに (カシ)ー	F0101101 CD	BILLY CELLY - C	TESETAGE PID	MINITAL CA	CDC4SI SUFM.	いただい。ここ	AE OUTE. BE	
L(DB)	LO(KHZ)	HI (MHZ)	ETR(MHZ)	kid(kaz) a	J-CTR(MHZ) (AV-KID(KHZ)	AV-SL (D3)	LOX (KHZ)	HIX(MHZ)
- <u>0</u> , 27	215.39759	315.36759	315.39759	e. eessa	315.38759	9.9 9339	9.03	315.30759	315.36759
8.58	308.71329	315.78403	312,24966	7.87274	312.28937	7.00136	-14.87	388.71329	315.78423
1.63	308.57706	315.87875	312.22791	7.39179	312.24658	7,25928	-15.57	399.57705	315.87875
2.68	388,48158	316.81944	312,21051	7.61786	312.28994	7.47448	-17.42	309.40158	316.01944
3.63	338.28594	316.12173	312.23532	7. £3279	312,24857	7.64188	-19.62	328.28894	315.12173
4.89	368.29168	316.20126	312.20142	7.99955	312.26913	7.65187	-28.65	399,20160	316.20126
5.09	398,13958	316.26523	312.19893	8, 13451	312.24823	7.72152	-21.69	328.13968	316.26523
6.09	338.85332	316.32681	312.19597	8.26349	312.24753	7.77804	-23.87	398 .0 5332	316.32661
18.63	327.86414	316.52911	312, 19214	8.65598	312.24589	7.83966	-23.33	327.86414	316.52011
23.69	387.53532	315.82816	312.17822	9, 28384	312.24454	7.85181	-48.63	367,53632	316.82816
32.69	397.32834	317.02269	312.16553	9.67435	312,24429	7.85328	-49.83	307.32834	317.03269
40.03	367.11392	317.13567	312.12451	10.02115	312.24423	7.85343	-51.85	387.11392	317.13507

323.203 315.239 BOND (MHZ)

LMIN(DE) -9.24 LMAX (DB) 6.21 LDEL (DE) 9.45 PYTH(TEG) -2485,35 Prox (DEG) 2324,63 PDEL (DEG) 5719.37

File: 34R8B010.DAT Passband Symmetry = 0.3 dB

PHONON CORPORATION

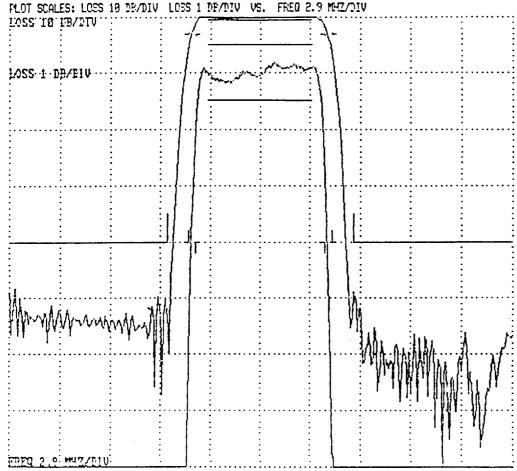
FILE=3CR8P010.DAT 10:32:59 03-04-1997

FIN 188832 825 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N PUAL_SXX

03-03-1997 H-8753, SSCF, SSFFIX, SSEEF

FREQUENCY (MHZ): CENTER= 332.2 WIDTH= 29 INCR.= .1 SYSTEM BANDWIDTH= 6

EMS ERRORS: LOSS(DB)= .1061475 FMASE(DEG)= 1627.946



FEAK: LEVEL (DE) = 28.02748 FREQ (MHZ) = 333.0759 DELAY (US) = -2.656775 SIDELOBE (DE) = -48.4758 ENERGY: LEVEL (DE) = 28.38607 CENTER (MHZ) = 332.1534 WIDTH (MHZ) = 8.237537 SKEW (MHZ) = -5.681407E -02 L (DE) LO (MHZ) HI (MHZ) CTR (MHZ) WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SI (DE) LOX (MHZ)

HIX(MHZ) 333.87593 -0.18333.97593 333,87593 0.62989 333.97593 9,99933 9,83 333, 27593 333, 97593 335.70413 332,12354 0.50328,54291 7.15122 332.17598 7.18375 -14.82 328.54291 335.70413 335.68862 1.02 328, 43146 332,12665 7.27717 332.17261 7.34959 -15.91328, 43146 335.86862 335,95776 2.83 328.29114 332,12445 7.66663 332,13541 7.55635 -17.92 328, 29114 335.95776 3.69 328.18597 335.86622 332.12616 7.88816 332.13921 7.67884 -19.55 328, 18527 335.66522 328.18514 336.14493 332.12555 8.03879 332, 15254 7.71678 -28.45 4.63 328.10614 335.14493 5.83 328.83925 335.21619 332,12772 8.17694 332, 15948 7.78928 -22.52 328.83325 335,21519 327.95288 €.09 335, 27792 332, 13848 8.29524 332,14565 7.81641 -23.64 327.98288 336.27792 327.79626 335,46915 332.13269 19.93 8.67289 332.15935 7.88145 -29.14 327.79626 336.46915 327.49962 335.77347 332.13666 28.89 9, 27365 332.15388 7.98457 -48.77 327,49362 235,77347 327.23431 336.95579 32.69 332.13997 9.67148 332.15338 7.93518 -51.03 327.29431 335.95573 48.89 327, 14235 337.12076 332, 13156 9.97823 332.15344 7.96528 -55.38 327.14235 337.12276

BAND (MHZ) 329,200 335,200

LMIN(DB) -8.18 LMAX(DB) 9.19 LDFL (DF) 8.35 FCLIC(DES) -2772.15

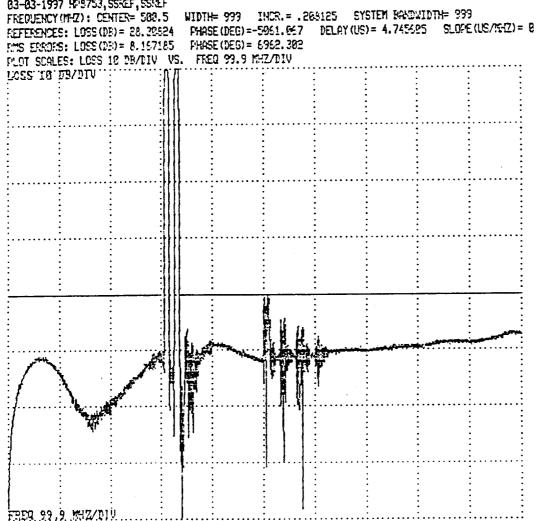
FTAX (DES) 2657.95 PDEL (DEG) 5641.11

File: 30R8P01B.DAT Passband Symmetry = 8.3 dB

PHONON CORPORATION FILE=3ER88018.DAT 10:33:42 83-84-1997

PH_109932_025 FINAL_FINCTIONAL TEMP:R PROTOFLIGHT AN RIDS_521

83-83-1997 1F:9753, SSEEF, SSREF



PEAK: LEVEL (DB) = 28.05311 FREQ (MHZ) = 332.9554 DELCY (US) = 6.034695 SIDELORE (DB) = 40.34793 FNERGY: (FUE) (DR) = 28.46795 CENTER (MHZ) = 322.6288 WIDTH (MHZ) = 16.45074 SKEW (MHZ) = 237.608

	20110170 00	112111121 01	TELECO MID					
LO (MHZ)	HI (KHZ)	CTR (MHZ)	VID (MHZ) A	Z-CTR (194 Z) ii	AN-MID (MHZ)	RV-SL(DB)	LOX (MHZ)	HIX(MHZ)
332,95535	332,95535	332.95535	6.68833	332,95535	6.00003	6.63	332, 95535	332, 95535
	335.72726	332.12042	7, 21368	332.15488	7.42785	-29.75	388.76236	335.72726
	335, 83157	332, 12164	7.42934	332, 15488	7.42785	-28.74	398,59570	335, 83167
	335, 97397	332, 12338	7,72117	332, 15265	7,74171	-28.91	308.41461	335,97397
	336, 87648	332, 12534	7,93228	332, 15265	7.74171	-28.91	388.29984	335.87548
		332,12729	8.35839	332, 15155	7.94852	-21.82	303.28381	335.15628
				332, 15155	7,94852	-21.62	368.13379	336, 22443
				332, 15155	7,94852	-21.62	388, 66659	336,28359
				332, 15192	8, 84327	-21.67	397.87704	336, 47399
			••••	332, 15283	8,69116	-21.18	327.54494	335.77332
				332, 15263	8, 63261	-21,63	397, 33939	336,95552
						-21,63	397, 12433	337, 12256
		L9 (MHZ) HI (MHZ) 332, 95525 332, 95535 328, 51358 325, 72726 328, 41162 335, 23167 328, 27269 335, 97397 328, 17419 336, 27648 328, 29398 336, 15628 328, 23398 336, 22443 227, 97697 336, 28369 327, 79135 336, 47368 327, 49693 336, 77332 327, 29642 336, 96552	332, 95525 332, 95535 332, 95525 328, 51358 325, 72726 332, 12842 228, 41162 325, 23167 332, 12164 328, 27269 335, 97397 332, 12384 328, 17419 336, 27648 332, 12534 326, 99998 336, 15628 332, 12728 328, 2338 336, 22443 332, 12875 227, 97697 336, 28369 332, 12989 327, 79135 336, 47398 332, 13229 327, 49683 336, 77322 332, 13597 327, 29642 336, 96552 332, 13098	LO (MHZ) HI (MHZ) CTR (MHZ) WID (MHZ) AND (MHZ	LO(MHZ) HI (MHZ) CTR (MHZ) VID (MHZ) SV-CTR (MHZ) 32.95535 332.95535 332.95535 0.00228 332.95535 32.95535 0.00228 332.95535 0.00228 332.95535 0.00228 332.95535 0.00228 332.15498 328.51358 335.72726 332.12042 7.21368 332.15498 328.41162 335.02167 332.12164 7.42004 332.15488 328.27202 325.97397 332.12338 7.72117 332.15305 328.17419 336.07648 332.12534 7.9228 332.15306 320.00208 336.15628 332.12720 0.95020 332.15155 328.03308 336.22443 332.12875 0.95020 332.15155 327.97697 336.20369 332.12900 0.32762 332.15155 327.79135 336.47300 332.12200 0.00207649 332.15102 327.49683 336.77332 332.13527 0.27649 332.15203 327.29642 335.96552 332.13090 0.66010 332.15203 327.29642 335.96552 332.13090 0.66010 332.15203	LOMMYZ) HI (MYZ) CTR (MYZ) WID (MYZ) AV-CTR (MYZ) AV-WID (MYZ) 32.95525 32.95535 332.95525 0.00228 332.95535 0.00003 328.51358 325.72726 332.12042 7.21368 32.15488 7.42785 328.41162 335.62167 332.12164 7.42904 332.15488 7.42785 328.27262 325.97397 332.12338 7.72117 332.15265 7.74171 328.17419 336.07648 332.12534 7.92228 332.15265 7.74171 328.09398 336.15628 332.12720 0.95820 332.15155 7.94852 328.03398 336.22443 332.12875 0.9135 332.15155 7.94852 327.97697 336.28369 332.12989 0.32752 332.15155 7.94852 327.79135 336.47308 332.13220 0.927649 332.15192 0.04927 327.49683 336.77332 332.13220 0.000000000000000000000000000000000	LOMMYZ) HI (MYZ) CTR (MYZ) WID (MYZ) AV-CTR (MYZ) AV-WID (MYZ) RV-SL (DB) 322, 95525 322, 95535 332, 95525 0,00020 332, 95535 0,00003 0,00 328, 51358 325, 72726 332, 12042 7,21368 332, 15488 7,42785 -29,75 328, 41162 335, 82167 332, 12164 7,42004 332, 15488 7,42785 -20,74 328, 27262 325, 97397 332, 12238 7,72117 332, 15655 7,74171 -20,91 328, 17419 336, 87648 332, 12534 7,93228 332, 15655 7,74171 -20,91 328, 83398 335, 15638 332, 12279 8,25629 332, 15155 7,94852 -21,02 327, 97697 336, 28369 332, 12875 8,19135 332, 15155 7,94852 -21,02 327, 97935 336, 47308 332, 12280 8,68173 332, 15192 8,64927 -21,07 327, 49683 336, 77332 332, 13293 9,27649 332, 15283 8,69201 -21,09	LOMMYZ) HI (MYZ) CTR (MYZ) WID (MYZ) AV-CTR (MYZ) AV-WID (MYZ) AV-SL (DB) LOX (MYZ) 322.95525 322.95525 322.95525 6.00228 332.95525 8.00003 6.00 332.95525 328.51358 325.72726 332.12042 7.21368 332.15488 7.42785 -28.75 203.76236 328.41162 335.62167 332.12164 7.42004 332.15488 7.42785 -28.74 398.59570 328.27262 325.97397 332.12338 7.72117 332.15265 7.74171 -28.91 308.59570 328.17419 336.87648 332.12534 7.9228 332.15265 7.74171 -28.91 308.29954 326.09308 336.15628 332.12720 6.95820 332.15155 7.94852 -21.02 308.20951 328.82308 336.22443 332.12875 8.19135 332.15155 7.94852 -21.02 308.13379 227.97697 336.28369 332.12989 8.32752 332.15155 7.94852 -21.02 308.06650 327.79135 336.47308 332.13220 8.68173 332.15192 8.84927 -21.07 397.87704 327.49683 336.77332 332.13207 9.27649 332.15283 8.09201 -21.09 307.33238 327.29642 335.96552 332.13093 9.66910 332.15283 8.09201 -21.09 307.33238

1.009 383.009 342.000 1000.000 BAND (MHZ)

-8.25 LMIN(DP) 50.67 49.23 FROX (DE) 77.92 78.26 88.24 70.52 49.15 LDEL(DE) 27.85 -9999.02 -9999.03 -9999.03 FHIR (DEG) PHAX (DEG) -5178.76 3343.89 8635,99

PDEL (DEG)

4828.24 13842.89 18534.95 FILE: 3ER88018.DAT Out-of-band Rejection: PEAK= 48.1 dB WIDTH= 8.828 MHz

PHONON CORPORATION FILE=3FR8F610.DAT 18:34:04 03-04-1997 PM 106832 825 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT AN IMAL SXX 03-03-1997 HP8753, SSREF, SSREF FREQUENCY (MHZ): CENTER= 322.2 WIDTH= 60 INCR.= .1 SYSTEM BANDXIDTH= 60 REFERENCES: LOSS (DE) = 28.39824 PHASE (DEG) = 280.2339 LELAY (US) = 1.529393 SLOPE (US/TH/Z) = 0 LOSS IN MENDIN. FEDQ 6 MHZ/DJU FEAK: LEVEL (DE) = 28.02748 FFED (MFZ) = 323.0759 DELAY (US) = .4021586 SIDELONE (DE) =-46.92373 LO(MHZ) HI(MHZ) CTR(MHZ) WID(MHZ) AV-CTR(MHZ) AV-WID(MHZ) AV-SL(DF) LOX(MHZ) HIX(MHZ) L(DB) -6.28 333.67593 333.67593 333.67593 8.63638 333.67593 6.68639 6.68 333.67593 323.67593 0.50 328.51593 335.72531 332.12061 7.20938 332.17590 7,35175 -7,98 338,75668 335,72531 1.03 328,41394 335,82767 332,12379 7.41373 332.17261 7.52167 -8.05 308.59653 335.82767 2.00 328.27898 335.97812 332.12451 7.69122 322.13641 7.73715 -8.14 388.41589 335.97812 3.68 328.17864 335.87538 332.12671 7.89734 332.13981 7,85322 -9,19 339,29770 335,07538 4.00 328.03836 335.15225 332.12521 8.05369 332.14206 7.92718 -8.22 308.21035 336.15225 5.89 328.83389 335.22272 332.12790 8.18954 332.15948 7.97143 -8.23 368.13779 336.22272 8.30609 332.14505 7.99929 -8.24 399.06973 336.28372 8.68976 332.15005 8.86575 -8.24 397.06807 336.77591 9.27059 332.15208 8.00952 -8.20 307.53082 336.77591 9.67450 332.15336 8.09107 -8.17 207.33638 336.96741 9.96190 332.15341 0.09117 -0.14 307.11499 337.12234 6.09 327.97772 336.28372 332.13074 8.30693 332.14505 18.89 327.79236 335.47311 332.13275 8.68876 332.15885 8.86575 9.27859 332.15388 9.67458 332.15338 22.00 327.49731 236.77591 232.13660 327, 29291 335, 96741 332, 13816 32,03 48.93 327.14944 337.12234 332.13141 9.9 BAND(MHZ) 389.288 315.288 323.288 335.288 LMIN(DB) -B.14 -8.19 -8.28 £7. 83 LMAX (DB) 0.31 8.83 €7, 22 6.45 6.35 CHINGES)

-8115.61 -8968.11 -1646.83 342.24 1644.25 745.35 2461.95 4833.37 2392.68 FILE: 3FR8B818.DAT Out-of-band Rejection: PEAK= 48.2 dB WIDTH= 0.090 M4z

PHAX (DEG) PDEL (DEG)

PHONON CORPORATION

FILE: 3FR89018.DAT (+SSCF)

PH_188832_825 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N DL

83-83-1997 H:8753, SSREF, SSREF, SSCF REFERENCES: LOSS (DE) = 28.38824 PMASE (DEG) = 268.2323 DELAY (US) = 1.529393 SLOPE (US/Y64Z) = 0

BANDPASS CHARACTERISTICS MESSUREMENT

FREQUENCY (KMZ)	LOSS (DB)	PHASE (DEG)
784.698	51.84	165.89
396.369	54.00	1121.39
333.123	5.23	837.95
303.898	Ø.12	93.45
311.540	0.22	-634.73
313.420	9. 12	-1357.64
315.169	-0.12	-2102.79
316.920	24.76	-2649.97
318.689	52 . 19	-2289.31
329.448	53. <i>9</i> 5	-1224.19
322 . 28 8	54.47	-283.23
323.969	53.69	€95.72
325.720	57.22	1663.87
327.480	20.70	1451.61
329.240	-0.65	733.13
331.999	-9.6≤	16.28
332.769	-0.21	-695.51
334.528	-0.28	-1419.93
335.289	5.94°	-2123.73
339.949	55,39	-2795.88
339.809	69.93	-2510.22



ELECTRICAL TEST DATA SHEET

ינניזיני ו	009I+ 17	ELECTRICAL TEST DATA SHE פסססמו , דססס ערטרעש בבאדפוקו	ET Common port		
TESTED B	Y: Pina	121576-3 FYONDY PORT: 1006055 TITLE: Do My DATE: 2	3/97 TIME: 1:30 PM	}	
TEST: <u>F1</u>	Sal Fusi	3110KAF			
ECUIPMEN			COL THE: 18/12/97		
	90 34	78A SERIAL: 2136A93127	CAL DUE: 7/8/97		
PASAGE	(4 74)	REDUIREMENT TITLE	DATA	P/F	
	Q/ATP				
		OPERATING TEMPERATURE	<u>. 35.5</u> C	<u>P</u>	
		CENTER FREGUENCY &			
3.2.1.4		CENTER FREQUENCY STAPILITY			
		LD: 312.835/312.365 MHz	312,212 MHz	<u>p</u>	
		HI: 332.035/332.365 MHz	332,132 Mil	<u>.</u>	
3.2.1.5	5.2.4	3 dB BANDWIDTH:		_	
		LD: 7.8/8.8 MHz	7.833 Mz	p p	
		HI: 7.8/9.8 MHz	7, 875 MHz	<u> </u>	
3.2.1.6	5.2.5	PRESERVED SYNTETRY			
		LO: /2.5 dB	<u>8.3</u> č9	P	
		HI: /0.5 dB	<u>P.3</u> dB	<u> P</u>	
3.2.1.7	5.2.6	PASSBAND RIPPLE		_	
		329.2-315.2 MHz: /1.0 dB	9.4 dB 2.3 dB	<u>5</u>	
		329.2-335.2 MHz: /1.0 dB	2.3 33	<u> </u>	
3.2.1.8	5.2.7	INSERTION LOSS	A		
		LD: 27.8/38.2 dB	<u>28.5</u> dB	<u>p</u>	
3040		HI: 27.8/38.2 dB	23.6 dB	<u> </u>	
3.2.1.3	5,2,8	INSERTION LOSS VARIATION		•	
		LO: -8.4/8.4 dB	<u>8.2</u> (3	<u> </u>	
2 2 4 40	500	HI: -9.4/0.4 dB AMPLITUDE BALANCE	<u>E.4</u> dB	<u>F.</u>	
3.0.1.10	3.2.9	LO, HI: 79.5 CB	יזג ממ	b	
7 2 4 44	F 2 10	OUT-OF-BOND REJECTION	<u> </u>		
	0.5.10		EAK (GE) NIDTH (NHz)		
			39.7 8.858		
		794: 383.882-305.835,			
		317.565-326.835,			
			48.1 8.623		
			39.7 dB	50	
		NIDTH: /1.5 MHz	8, 656 HHz	71	
3.2.1.12	5, 2, 11	SHAPE FACTOR			
		10: /1.38 Unitless	1.29 Unitless	Þ	
		FI: /1.38 Unitless	1.25 Utitless	<u> </u>	
3.2.1.14	5.2.12	VEWR (FIETURAN LOSS)			
		389.2-315.2,329.2-335.2 MHz			
		DUAL S11: 7.5/ CB	<u>10.5</u> d3	<u>.p</u> _	
		DUAL 522: 7.5/ dB	<u>7.8</u> d3	<u>b</u>	
6.0.2	5.2.14	LIMITED FUNCTIONAL TESTS	•	er T	
		CENTER FREQUENCY: -0.1/0.1 M		5	100
		3 CB BANDVIDTH: -9.16/6.15 K		77	(UT)
IONE	5 2 15	INSERTION LOSS: -8.5/8.5 d3	_೦_್ಲಿ	<u>T</u>	
13.12	Cezelo	DATA SHEET SUMMARY (PASS/FAIL)	P (pr)		
					
נים אלהלולה. הים אלהלולה		DA .	CASE: 5Y858		
7 HETCAN		22	TEL: 203-451-		
EIMEDURY,	בון הבה	מי	FRX: 223-651-	16118	

PHONON CORPORATION FILE=3AHSE019. DAT 10:42:08 23-04-1997 PM 188832 825 FINAL FUNCTIONAL TERMIN FROTOFLIGHT AN DURL SXX 63-63-1997 HP8753, SSCF, SSFFIX, SSFEF FREQUENCY (MMZ): CENTER= 312.2 WIDTH= 29 INCR.= .1 SYSTEM FAMILIETH= 6 REFERENCES: LOSS(09) = 28.55753 PHASE(DEG) = 5545.036 DELAY(US) = 8 SLOPE(US/FEZ) = 8 FMS EFRORS: LOSS (DB) = .1110082 PMSSE (DE0) = 1647.528 FLOT SCRIES: LOSS 18 DB/DIV LOSS 1 DB/DIV VS. FRER 2.9 YHZ/DIV LOSS TO DEVELOR LOSS: 1 - DB/BIU · · · -4/2-4/12-4-4-4-4/4/1/2/1/2/ : 1 بالأندلان المارة والأطلط

WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DP) LOX (MHZ) L(DB) LO(MHZ) HI (MZ) CTR(MYZ) RIX(MHZ) 315.31955 315.31655 8,02932 315,31055 6.66993 0.02 315.31055 315, 31955 -0.27 315.31055 7,66033 312,23123 7.00261 -14.23 368.71997 363.71997 315,78833 6.59 315.78833 312,25415 7.25984 -15.57 399,59396 315,83925 312, 23594 7.30419 312,24918 388.58386 315,89935 1.29 -17.43 312,28473 7.47527 388.48335 315,82685 316,82695 7.51703 2.63 383, 48985 312.21756 -19.82 308.29529 316.12820 7.83292 312.25351 7.64234 316.12520 3,83 308, 29529 312,21173 389,21892 7.65381 -23.57 788.21832 4.08 315, 23737 312,28858 7.99734 312, 27451 316, 20737 398.13785 316.27234 312,22599 8,13449 312,25485 7.72255 -21.53 302,13755 316.27234 5.63 5.93 389.67826 316, 33355 312, 20197 9.26337 312.25425 7.77317 -23.88 388.87628 315, 33355 8.65552 7.94%9 -23.34 12.38 397.87119 315,52679 312,19894 312,25345 307.87119 315,53678 9, 28227 22.83 327.54382 316,52669 312,25269 7.55273 -48.59 327,54352 312.16524 215, 82559 -49.86 397.33331 312,25253 7.85424 397.33331 317,00936 39.99 317,98996 312.17120 9.67575 7.85436 -51.83 49.09 10.62258 312.25247 387.12123 397.12199 317.14358 312, 13239 317, 14368 EAND(MMZ) 309,209 315,299 LMIN(DB) -B. 24 LYEX (DE) 2,21 LTEL (FB) 8.45

PDEL (DEG) 5710.03 File: 30458012.DAT Passband Symmetry = 2.3 dB

-2395, 16

2923.93

FMIN(DEG)

PHISX (DEG)

FILE=30H8B318.DAT 18:42:57 03-84-1997 FM_193032_025 FINAL_FUNCTIONAL TEMP IN PROTOFLIGHT IN THAT SYX 03-03-1997 HP8753, SSOF, SSFFIX, SSEEF PLOT SCALES: LOSS 18 DB/DIV LOSS 1 DB/DIV VS. FRED 2.9 MHZ/DIV HOSS TO DRADIA. FOSS-T-DEVELY-नेपान्य कुळी अध्याद्र स्ट्रांस् FEAK: LEVEL (DE) = 28.30057 FREG (MDZ) = 333.877 DELAY (MD) =-2.655552 SIDELDE (DE) =-48.20525 DMERGY: LEVEL (DE) = 28.74752 CEMTER(MMZ) = 322.1565 WINTH(MMZ) = 8.222297 SMEW(MMZ) =-5.3497995-02 L(DB) LC (KHZ) HI (HIZ) CTR (HHZ) WID (KHZ) AV-CTR (KHZ) AV-WID (KHZ) AV-SL (DB) LOX (KHZ) HIX(MEZ) -9.18 332.27703 333, 27723 333,67783 0.03392 333.07723 0.03033 6.68 333, 07783 233,97793 8.58 328.55914 235,70419 332,13162 7.14495 332,17517 7.17919 -14.85 328.55914 335,76419 1.66 328.44259 235, 81155 322, 12714 7.34447 332,17255 7.34435 -15.96328,44269 335,81155 2.83 328, 39157 335.96442 332.13320 7.65234 332,16986 7.48932 -17.23 328.38157 335,95442 3.83 328, 19492 336,07001 332, 13245 7.87593 332.14111 7.65249 -19.59328.19492 336.07021 4.00 388, 11587 335,14838 332,13232 8.83218 332.16453 7.78881 -23,52 328.11527 335,14838 336.21964 5.00 338,84913 322, 13769 8.17151 332,15253 7.78864 -22.53 329,94813 336, 21964 5,69 327, 90294 336.29128 232,13611 8.29634 7,83591 -23.69 332.14858 327, 99834 336,28128 10.03 327, 88453 325,47258 732, 17055 8,66666 332.16933 7.96151 -27.75 327.89453 335, 47258 23,88 327.51031 335,77548 332,14319 9,26529 332,15865 7.89328 -34.95 327.51821 236, 77648 33.69 327, 30713 335.96593 332.13511 9.657% 332, 15854 7,89557 -43.31 327.36713 335, 95509 43, 63 327.15024 337,11389 332.14706 9.93365 332.15854 7.89575 -55.68 327.18824 337.11389 BAND (MHZ) 329, 239 335, 269 LMIN(DB) -3.17LMOV (PE) 2.12 LTEL (IB) P. 35 PMIN (DEG) -2773.12PETAX (DEG) 2857.54 POEL (DEG) 5640.65 File: 31469918.0AT Passband Symmetry = 8.3 dB

PHONON CORPORATION

Channel 14 Bandpass Filter

SAW Filter (S/N: 1331576-4, S/N: B02)

•		ELECTRICAL TEST DATA SH	का		
OFRRIET PA	WT: 133	1576-4 PHONON PORT: 18862	SERIAL: M	2	
TESTED BY:	PORCE	TITLE: MILE DATE:	124/4) 11	E:10:20 Ars	
TEST: FIN	N FUNCT	TONAL			
EQUIPMENT:	HP 875	30 SERIAL: 3418A87982	_ CAL DUE:1	112/97	
	HP 347	8A SERIAL: 2136A83127	CAL DUE: 7/	1/37	
PARAGRI		REDUIREMENT TITLE	DATA		P/F
REQ.	Q/ATP			•	р
3.2.1.I	5.2.1	OPERATING TEMPERATURE	<u>-4.7</u>	ւ	
	5.2.3	CENTER FREDIENCY & CENTER FREDIENCY STABILITY			
3.2.1.4		LD: 317.535/317.865 Miz	317.716	MHz	P
		HI: 326.535/326.865 MHz		19tz	P
2 2 1 K		3 dB BANDWIDTH:	<u> </u>		
3.6.1.0	J.E.7	IU. 5 8/5 8 MH.	2.91	<u> 194z</u>	P
		LO: 2.8/3.8 MHz HI: 2.8/3.8 MHz	2.93	YHz	<u>p</u>
2216		PASSBAND SYMETRY			
3.6.1.0		LD: /8.5 dB	8.8	ď₿	<u>p</u>
•		HI: /8.5 dB	0.8	_ dr	P
3.2.1.7		PASSBAND RIPPLE			
		316.575-318.825 Mtz: /1.8 d	B <u>8.3</u>	4 B	P
		325.575-327.625 MHz: /1.8 d	8 <u>8.3</u> 8 6.5	6 8	<u> </u>
3.2.1.8		INSERTION LOSS			_
;		LO: 27.8/36.2 dB	29.8	dB	<u>p</u>
,		HI: 27.8/38.2 dB	28.7	_ &	<u>p</u>
3.2.1.9	5.2.8	INSERTION LOSS VARIATION		JB.	n
•		LO: -0.4/8.4 dB	<u>-8.1</u>	_ <u></u>	p
		HI: -0.4/9.4 dB	-0.1	_ dB	<u>-</u>
3.2.1.10	5.2.9	APPLITUDE BALANCE	e.3	a	р
	E 0 10	LO, HI: /8.5 dB	_6.3	_ 00	<u>-</u>
3.2.1.11	2.5.18	OUT-OF-BOND REJECTION BOND	PEAK (dB)	WIDTHOOPIE)	
		WIDE: 1-313,331-1988 Why:		8.000	
		NIAL: 313.629-315.585,			
		319.815-324.585,			
•		328.815-331.8 Hiz:	41.2	0.899	
		PEAK: 35.8/ 4B	41.2		P
		WIDTH: /B.6 MHz		9,900 Miz	<u>P</u>
3.2.1,12	5.2.11	SHAPE FACTOR			_
		LO: /1.38 Unitless		Unitless	무
:		HI: /1.30 Unitless	_1.24	Unitless	<u> </u>
3.2.1.14	5.2.12	VSMR (RETURN LOSS)	2 AGE MAL		
		316.575-318.865,325.575-327	امار میں میں۔ م	æ	D
		DURL S11: 7.5/ dB DURL S22: 7.5/ dB	8.4	_	नेन कि
4.8.2	5 2 14	LIKITED FUNCTIONAL TESTS			<u>-</u>
71016	J. L. 14	CENTER FREEZENCY: -0.1/8.1	Mitz O	194z	P
;		3 de maistrit -0.96/8.96		MHz	Y
;		DISERTION LOSS: -8.5/8.5 di		_ @	卫
NONE	5.2.15	BATA SHEET SUMMERY		RO	
		(PASS/FAIL)	<u> </u>	עיע	
		<u></u>			
PHONON CO		DN		CORE: 6YESE	.0014
7 HERMAN				TEL: 263-651	
SIMSBURY,	CI 868	78		FAX: 283-651	0010

PEAK: LEVEL(DB) = 28.73477 FRED ON(Z) = 316.5109 DELAY(US) =-3.073554 SIDELAME(DB) =-41.29675 ENERGY: LEVEL (DB) = 29, 14792 CENTER (NHZ) = 317, 7896 WIDTH (NHZ) = 3, 653399 SHEH (NHZ) = 1, 324691E-62 HID (MIZ) AM-CTR (MIZ) AM-HID (MIZ) AM-SL (BB) LOX (MIZ) HIX (MIZ) L(DB) LD(#42) HI (MIZ) CTR(NHZ) 8,00000 316.51089 316.51089 -0.24 316.51009 316.51889 316.51009 316.51009 **8.80** 319.03329 2.65488 317.69366 2.64985 -13.51 315.37842 0.50 316.37842 319.03329 317.70587 316.33725 317, 69458 319.07703 1.00 316.33725 319.07783 317.78715 2.73978 2.73435 -14.97 2.88452 319.13751 316, 29114 -16.77 2.84637 317.69632 2.00 316, 29114 319. 13751 317.71432 317.71576 2.83413 316, 25674 319, 17488 2.91896 317.71149 -17.83319, 17480 3.00 316.25674 -21.36 2.98919 317.71627 2.87923 316.22748 319, 20767 4.80 316, 22748 317.71759 319.20767 -28.32 316.20322 319.23438 5.66 316, 20322 319.23438 317.71881 3.83116 317.71627 2.87923 2.90812 -23.45 316.18240 319, 25778 316.18240 319.25778 3.07538 317.70953 6.00 317.72009 3.21344 2.92409 -27.23 316.11746 319.33898 317.72418 317.70932 319.33890 10.00 316.11746 316.01315 319.44400 316.01315 319.44400 317.72858 3, 43065 317.70944 2.93419 -37.74 29.80

317.70953

317.70953

3.56140

3.63818

BAND (NH2) 316.575 318.825

315.94980

315.91479

LMIN(DB) -9.17 LMAX(DB) 0.17 LDEL(DB) 9.34 PMIN(DEG) -1262.34 PMAX(DEG) 1255.89 PDEL(DEG) 2518.22

30,00

40.00

FREQ 9 WHZ/DIU

File: 4AC8B82A.DAT Passband Symmetry = 8.6 dB

319.51120

319.55298

317.73650

317.73389

2.93506

2,93508

49.85

-51.30

315.94989

315, 91479

319.51120

319, 55298

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PHONON CORPORATION
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FILE=4CC8B82A.DAT 14:03:56 85-28-1998

PN 100834_826 FINAL_FUNCTIONAL TEMP:C PROTOFLIGHT /N DUAL_SXX

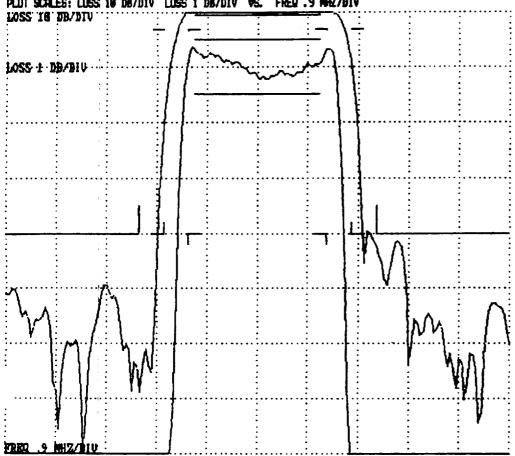
96-23-1997 HP8753, SSCF, SSFF1X, SSREF

"REDUENCY (NH2): CENTER= 326.7 WIDTH= 9 INCR. = .85 SYSTEM BANGHIBTH= 2.25

FERENCES: LOSS (DB) = 28,65714 PHOSE (DEG) =-2932,698 BIPLAY (US) = 0 SLOPE (US/NHZ) = 0

MS ERRORS: LOSS(DB)= .1462517 PHASE(DE6)= 742.2654

PLOT SCALES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED .9 1042/BIV



PEAK: LEVEL(08) = 28.2887 FREQ(NHZ) = 325.5515 DELAY(U6) =-3.164168 SIDELEDE(DB) =-44.00281 ENERGY: LEVEL(DB) = 28,77118 CENTER(NHZ) = 326,7459 MIDTHONZ) = 3,675341 SKEN(NHZ) = 1,869928E-62 L(DB) LD(M(Z) HI (MHZ) CTR (MIZ) WID (NHZ) AN-CTR (NHZ) AN-WID (NHZ) AN-SL (DB) LDX (NHZ) HIX (MHZ) -0.38 325.55145 325, 55145 325, 55145 6. 80000 325.55145 0.0000 6.00 325, 55145 325, 55145 9.50 325, 38800 328, 12580 326, 75650 2.73700 325, 74164 2.76899 -14.45325, 38898 328, 12588 325, 35657 328, 15524 1.00 326, 75592 2,79868 326, 76199 2.80960 -15.26 325, 35657 32B, 15524 325, 31149 328, 19983 2,88834 2.00 326, 73568 326, 74286 2.84819 -16.21 325.31149 328, 19983 328.23254 325,27725 326, 75488 325.74408 3.60 2,95529 2, 50906 -18, 48 325,27725 328, 23254 325, 24911 328, 25925 4.88 326, 75418 3.01013 325, 74496 2.95878 -21.29 325, 24911 328, 25925 5.00 325, 22513 326.744% 328.28235 326.75372 3.05722 2,95978 -21.25 325, 22513 328, 28235 325.20407 328. 38264 6.00 326.75336 326.75177 2.96374 -22.71 325.29487 328, 38264 3. 09657 10.00 325.13800 328, 36697 326.75250 3.22897 326, 74582 325, 13866 2,98636 -29.63 328, 36697

325.74594

326.74591

326, 74591

2.99520

2.9955

2.99559

-41.12

-47.97

-58.32

325.03186

324.96353

324,91748

328, 46741

328, 52866

328.68329

3. 43555

3.55713

3.54981

324, 91748 328, 56729 46.00 BAND (MIZ) 325, 575 327,825

325.03186

324.96353

LMIN(DB) -0.30

20.00

30, 80

LIMAX (DB) 0.21

LDEL (DB) 0.51 PMIN (DEG) -1256.34

PMAX (DEG) 1258.34 PDEL (DEG) 2514.69

File: 4CC8B829.DAT Passband Symmetry = 0.0 dB

328.46741

328.52866

326.74963

326.74218

326, 74237

AEROJET P	ART: 13	31576-4 PHONON PART: 18862	K SERTAL :	2	_
TESTED BY	POPL	4 TITLE: MCP DATE:	12414) IS	E: 40:00 M	7
EQUIPMENT	: HP 87	539 SERTAL:3410A67982	CAL DUE:1	9/12/97	
	HP 347		CAL DUE: 7	/8/37	
PARAGR	ADH	REQUIREMENT TITLE	DATA	1	P/F
REQ.	Q/ATP				_
3.2.1,1	5.2.1	OPERATING TEMPERATURE	15.8	_ c	p
		CENTER FREQUENCY &			
3.2.1,4		CENTER FREEMENCY STABILITY	217 70	5 Mtz	D
		LO: 317.535/317.865 MHz HI: 326.535/326.865 MHz	31/./E	7 Mz	P
7915	524	3 GB BONDNIBLH:	5CD: 19	<u> </u>	
3.2.1.3	3,6,4	LO: 2.8/3.8 Miz	2,91	9 MHz	P P
		HI: 2.8/3.8 Mb	2.96	9 18tz 5 18tz	P
3.2.1.6	5.2.5	PASSBAND SYMMETRY	اللبات.		
0101250	01010	LO: /8.5 dB	8.6		P
		HI: /8.5 dB	0.1	dB	P
3.2.1.7	5.2.6	PASSBAND RIPPLE			
		316.575-318.825 HHz: /1.0		_ 🚜	P
:		325.575-327.825 HHz: /1.8 (B 8.5	d b	<u> </u>
3.2.1.8	5.2.7	INSERTION LOSS		.15	n
		LD: 27.8/38.2 dB	<u>27,1</u>	— ₫₿	-
3040		KI: 27.8/38.2 dB	24.8	00	<u>p</u>
3.2.1.9	5.2.8	INSERTION LOSS VARIATION LO: -8.4/8.4 d3		dB	p
		HI: -8.4/8.4 dB	8.0	— dB	P
3.2.1.19	5.2.9	APPLITUDE BALANCE			
	0,0,,	LD, HI: /8.5 dB	0.3	₫ B	<u>P</u>
3.2.1.11	5.2.19	OUT-OF-BAND REJECTION		_	
		TAND	PEAK (dB)	WIDTH (PFIz)	
		WINE: 1-313,331-1000 MHz:	<u> 46.2</u>	<u>8.866</u>	
		NAL: 313.888-315.585,			
ķ.		319.815-324.585, 328.815-331.6 Miz:	41.4	a 203	
		PERK: 35.8/ dB	41.4	0.000	Đ
		WINTH: /8.6 MHz		8.000 Miz	P
3.2.1.12	5.2.11	SHAPE FACTOR			
		LO: /1.38 Unitless	_1.2	Unitless	P
·		HI: /1.38 Unitless	1.5	Unitless	P
3.2.1,14	5.2.12	VSNR (RETURN LOSS)			
		316.575-314.625,325.575-32		_	
		DOPL S11: 7.5/ dB	9.4		<u> </u>
4 6 6.		NUAL S22: 7.5/ dB	<u> 8.5</u>	_ #	
4.8.2	J. E. 14	LIMITED FUNCTIONAL TESTS CENTER FREMERICY: -0.1/0.1	M1 10 60	f Maly	2
i		3 de Brienisch: -8.66/8.66		Militz	व
:		INGERTION LOSS: -8.5/8.5 A		_ (3	اعلمام اداد
NONE "	5.2.15	DATA SHEET SUMMARY	,		_
-		(PASS/FAIL)	<u> </u>	ر الم	
DUDANNI AA	00000077	M1		CASE: 6Y858	
PHONON CO 7 HERMAN		T.		TEL: 283-651	-8211
SIMSBURY,		72		FAX: 283-651	
attenant/14	U1 000	19		· Ini Pari Ari	

ELECTRICAL TEST DATA SHEET

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PHONON CORPORATION
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FILE=4ARBB82A.DAT: 14:04:09 05-28-1998

PN_188834_826_FINAL_FUNCTIONAL_TEMP:R_PRETOFLIGHT_/N_DUAL_SXX

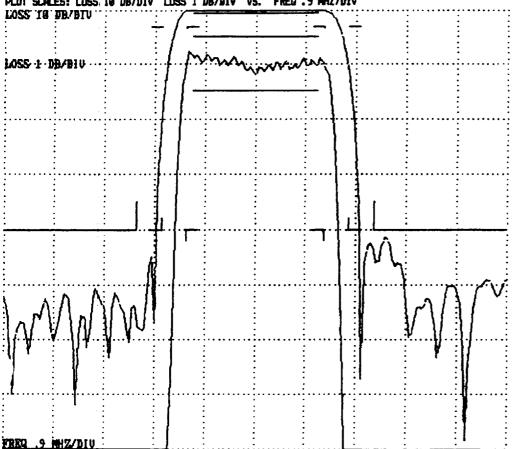
%-23-1997 HP0753, SSCF, SSFF1X, SGREF

YEDUENCY (NHZ): CENTER= 317.7 WIDTH= 9 INCR.= .05 SYSTEM BONDWIDTH= 2.25

AFFERENCES: LOSS(DB) = 29.07305 PHOSE (DEG) = 3781.215 DELAY(US) = 0 SLOPE(US/M-12) = 0

RMS ERRORS: LOSS(DB) = 8.576339E-62 PHREE(DEB) = 743.5031

PLOT SCREES: LOSS 10 DB/DIV LOSS 1 DB/DIV VS. FRED .9 M4Z/DIV



PERK: LEVEL(DB) = 28.83042 FRED(NHZ) = 316.5176 DELAY(US) =-3.869631 SIDELDME(DB) =-41.67301 ENERGY: LEVEL (DB) = 29.24436 CENTER (NHZ) = 317.7191 NIDTH (NHZ) = 3.053117 SMEN (NHZ) = 1.305556E-02

L(DB) LD(MHZ) HI (NHZ) CTR (MHZ) WID (NHZ) AV-CTR (NHZ) AV-WID (NHZ) AV-SL (DB) LDX (NHZ) HIX (MIZ) -0.24 316.51764 316_51764 316-51764 315, 51764 8.00000 8.00000 2.00 316.51764 316, 51764 8.58 316.38715 319, 84487 317, 71561 2,65692 317, 69485 2.64947 -13.50 316, 38715 319,84487 1.80 316, 34659 319, 66368 317.71515 317, 69684 2.73789 2,73394 -14.97316, 34659 319, **GR368** 2.00 316, 29916 319, 14538 317.72272 2.84714 317.69992 2.86348 -16.73316, 29916 319, 14639 3.00 316, 26486 319, 18423 317, 72455 2,91937 2. A3438 317.71579 -17.85 315, 25486 319, 18423 316.23685 319.21567 319.21567 4.80 317.72626 2.97882 317.71616 2,87938 -28.38 316, 23685 316.21262 5.00 319.24289 317.72775 3.03027 317.71616 2.87938 -28.34 316.21262 319, 24289 6.00 316, 19189 319.26718 317.72955 3.07529 317.71680 2.90006 -23.46 316.19189 319,26718 10.00 316.12735 319.34845 317.73389 3.21310 317.71768 2.92392 -27.20 316. 12735 319.34045 28.00 316,02390 319, 45364 317.73877 3.42975 317.71915 2.93459 -41.84 316.02390 319.45364 38, 88 315, 95914 319.52792 **→7.82** 317.74353 3.56879 317.71989 2.93494 315, 95914 319.52792 40.00 315, 93463 319,55649 317,74554 3,62186 317.71909 2,93498 -58.33 315, 93463 319.55649

BAND (NHZ) 316, 575 318, 825

-8.17 LMIN(DB) LMAX (DB) 8.19 LDEL (DB) 8.36 PHIN (DEG) -1262.30 PMAX (DEG) 1255, 48 PDEL (DEG) 2517.77

"ile: 4ARSBOER DAT Passband Symmetry = 8.0 dB

File: 4CR8B82R.DAT

Passband Symmetry = 8.1 dB

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PHONON CORPORATION
 FILE=ACR8802A.DAT 14:04:13 05-28-1998
 PN 198834 826 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX
 06-23-1997 HP8753, SSCF, SSFF1X, SSREF
 FREDUENCY (NHZ): CENTER= 326.7 HIDTH= 9 INCR.= .65 SYSTEM BANDMIDTH= 2.25
 REFERENCES: LOSS(DB) = 28.78273 PHRSE(BE6) =-3228.638
                                                           BELAY (US) = 8 SLOPE (US/NHZ) = 8
 RMS ERRORS: LOSS(DB)= .1415588 PHASE(DEB)= 742.3314
PLOT SCALES: LOSS: 10 DB/DIV LOSS 1 DB/DIV VS. FRED .9 NWZ/DIV
 LOSS TO DB/DIV
LOSS 1 DBABIU
       .9 MHZ/DIU
PERK: LEVEL (DB) = 28.42048 FREQ (NHZ) = 325.5613 DELRY (US) =-3.155596 SIDELODE (DB) =-41.16482
ENERGY: LEVEL (DB) = 28,89982 CENTER (NHZ) = 326,7595 MIDTHOHZ) = 3,675975 SMEN (NHZ) = 1,597321E-62
 L(DB)
          LD(MHZ)
                       HI (NHZ)
                                   CTR(MIZ)
                                               MID (MIZ) AV-CTR (MIZ) AV-NID DMZ) AV-SL (DB) LDX (MIZ)
                                                                                                            HIX (MIZ)
 -8.36
         325.56131
                      325.56131
                                   325, 56131
                                                                                                            325, 56131
                                                 8.8
                                                            325, $6131
                                                                                       8.00
                                                                                               325.56131
  0.50
         325, 40073
                      328, 13492
                                   326, 76792
                                                 2,73419
                                                            326, 76678
                                                                           2,72208
                                                                                               325, 48973
                                                                                                            328, 13492
                                                                                      -13.66
  1.00
         325, 37198
                      328, 16742
                                   326, 76971
                                                 2,79544
                                                            325. 76514
                                                                           2.88913
                                                                                      -15,29
                                                                                               325, 37198
                                                                                                            328_16742
  2.80
         325.32378
                      328.21176
                                   326.76773
                                                 2.88886
                                                            326, 76511
                                                                           2.87932
                                                                                      -17.38
                                                                                               325, 32370
                                                                                                            328, 21176
         325, 28922
  3.88
                      328, 24457
                                   326.76691
                                                 2.95535
                                                            326.75143
                                                                           2.98641
                                                                                      -18.42
                                                                                               325, 28922
                                                                                                            328, 24457
         325.26093
                      328.27124
                                   326.76608
  4.80
                                                 3.01031
                                                            326, 76370
                                                                           2, 93939
                                                                                     -19.76
                                                                                               325,2593
                                                                                                            328, 27124
                                   326. 76563
                                                            325. 75449
                                                                                               325, 23763
  5.88
         325, 23703
                      328, 29422
                                                 3.65719
                                                                           2.94438
                                                                                     -21.17
                                                                                                            328, 29422
                                                                                      -22.84
  6.00
         325, 21594
                      328, 31458
                                   325, 76526
                                                 3, 89863
                                                            326.76221
                                                                           2.96322
                                                                                               325, 21594
                                                                                                           328, 31458
                                                                                      -28.88
         325, 14963
                                                 3,22949
 18.00
                      328, 37912
                                   326, 76437
                                                            326.75827
                                                                           2.98549
                                                                                               325.14963
                                                                                                           328, 37912
 29.98
         325, 94321
                                   326.75282
                                                                                      -48.68
                                                                                               325.04321
                      328, 48083
                                                 3.43762
                                                            326. 75937
                                                                           2. 99366
                                                                                                           328, 48683
 38, 98
         324, 97461
                      328, 54126
                                   326, 75793
                                                 3.56665
                                                            326.75943
                                                                           2.99486
                                                                                                           328,54126
                                                                                      -47.69
                                                                                               324.97461
 48.80
         324.92731
                      328, 57147
                                                                                     -50.70
                                  326.74939
                                                 3.64417
                                                            326, 75946
                                                                           2,99411
                                                                                               324.92731
                                                                                                           328.57147
BAND (MIZ)
            325.575
                       327.825
LMIN(DB)
                   -0.31
LMAX (DB)
                   0.21
LDEL (DB)
                    9.53
PMIN (DEG)
               -1256.42
PMAX (DEG)
                1258.41
PDEL (DEG)
                2514.83
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DØ9

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PHONON CORPORATION
FILE=4ER8B82R, DAT 14:04:17 05-28-1998
 PN 100834 826 FINAL FUNCTIONAL TEMP:R PROTOFLIGHT /N WIDE_521
 46-23-1997 HP8753; SSREF, SSREF, SBREF
  EDUENCY (NAZ): CENTER= 500.5 WIDTH= 999 INCR.= .208125 SYSTEM BANGNIDTH= 999
  ∠FERENCES: LOSS(DB)= 28.92789 PHASE (BEG)= 1373.017 DELAY (US)= 4.732862 SLOPE (US/NHZ)= 0
 RMS ERRORS: LOSS(DB)= 7.888999 PHASE(BEG)= 18193.56
PLOT SCALES: LOSS: 10 DB/DIV VS. FRED 99.9 NHZ/DIV
LOSS 18 DE/DIV
PEAK: LEVEL(DB) = 28.36957 FREQ(NHZ) = 327.8936 DELAY(U6) = 6.336602 GIDELONE(BB) =-42.15535
ENERGY: LEVEL (DB) = 29.86486 CERTER (NHZ) = 322.5975 HIDTH (NHZ) = 6.128643 SMEH (NHZ) = 381.532
 L(DB)
          LO(MHZ)
                      HI (MHZ)
                                  CTR (MHZ)
                                              NID (NHZ) AN-CTR (NHZ) AN-NID (NHZ) AN-SL (DB) LOX (NHZ)
                                                                                                         HIX (MHZ)
                                                                         0.00000
 <del>-0</del>.56
         327.89355
                     327.89355
                                  327.89355
                                                0.00000
                                                          327.89355
                                                                                     8.00
                                                                                             327.89355
                                                                                                         327, 89355
  9.50
         325.39484
                     328. 15189
                                  326, 77338
                                                          325.79996
                                                                         2.82916
                                                2.75785
                                                                                    -25.04
                                                                                             316, 38989
                                                                                                         327.89355
         325.35867
                                 326.76654
                     328, 17441
  1.88
                                                          326. 79178
                                                                         2.98729
                                                                                             316.34634
                                                                                                         328, 17441
                                                2.81573
                                                                                   -25, 28
  2.00
         325, 31238
                     328, 22258
                                 326. 76746
                                                2.91013
                                                          326, 79178
                                                                         2.96729
                                                                                   -25.28
                                                                                             316.38518
                                                                                                         328, 22250
                                                2.98514
  3.00
         325, 28137
                     328, 26651
                                 326,77393
                                                          326, 79178
                                                                         2.98729
                                                                                   -25.28
                                                                                             316.25500
                                                                                                         328, 26651
                                                          326.74985
                                                                                   -25.41
  4.00
         325, 25748
                     328, 29685
                                 326, 77676
                                                3.83857
                                                                         3.07126
                                                                                             316,20813
                                                                                                         328, 29685
         325, 23566
  5.00
                     328_31741
                                 326, 77655
                                                3.08176
                                                          326, 74985
                                                                                   -25,41
                                                                         3.07126
                                                                                             316, 18161
                                                                                                         328, 31741
         325, 21429
                                                3.12000
  6.00
                     328, 33429
                                 325, 77429
                                                          326, 74985
                                                                         3.87126
                                                                                   -25,41
                                                                                             316, 16333
                                                                                                         328, 33429
 18.88
         325, 14365
                     328, 38883
                                 326, 76224
                                                3.23718
                                                          325, 75893
                                                                         3.89223
                                                                                   -25.44
                                                                                             316.11897
                                                                                                         328, 38883
                     328, 43866
 28,08
         325, 84514
                                                                                   -25.44
                                 325, 74188
                                                3.39352
                                                          326, 75946
                                                                         3.89487
                                                                                             316.06812
                                                                                                         328, 43866
 38.99
         324, 99197
                     328, 49646
                                 326,74428
                                                3.50449
                                                          326, 75946
                                                                         3.09487
                                                                                   -25.44
                                                                                             316.82573
                                                                                                         328, 49646
 40.00
         324, 93884
                     328, 55429
                                 325, 74658
                                                3.61545
                                                          326, 75946
                                                                         3.09487
                                                                                  -25.44
                                                                                            315.98337
                                                                                                         328, 55429
BAND (NHZ)
                    313.800 331.000 1800.800
              1.000
LMIN(DB)
                 46, 98
                             -1.46
                                       46.21
LMAX (DB)
                 188.80
                            68,28
                                       76.12
LDEL (DB)
                  61.19
                            68.74
                                       29, 91
PMIN(DEG)
               -9999.00
                           722.48 -9999.80
PMAX (DEG)
                2682.26
                          4116.51
                                   3797.99
PDEL (DEG)
               12501.26
                          3394.63 13796.99
 "UE: 4ER8B82A.DAT Out-of-band Rejection: PENK= 46.2 dB WIDTH= 6.600 MHz
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PHONON CORPORATION
FILE=4FR8882A, DAT 14:04:19 65-28-1998
PN_188834_826 FINAL_FUNCTIONAL_TEMP:R PROTOFLIGHT /N DUAL_SXX
06-23-1997 HP6753, 55REF, SSREF, SSREF
FREQUENCY (NHZ): CENTER= 322.2 HIDTH= 36 INCR.= .05 SYSTEM BANGNIBTH= 38
REFERENCES: LOSS(DB) = 28.92789 PHASE(DEG) = 291.5657 BELRY(US) = 1.872925 SLOPE(US/NHZ) = 8
RMS ERRORS: LOSS(DB)= 23.53657 PHASE(GE6)= 1183.948
PLOT SCALES: LOSS: 18 DB/DIV VS. FRED 3 NHZ/DIV
MOSS IN DEVELO
FREQ 3 MHZ/DIU
PERK: LEVEL(DB) = 28.42049 FREE(NHZ) = 325.5613 DELRY(US) = .5502491 SIDGLOBE(DB) = 41.16481
HI (MHZ)
                               CTR(NHZ)
                                           WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ)
                                                                                                  HIX (MHZ)
 L(DB)
         LD (MHZ)
                                                                                      325.56128
                               325,56128
                                             8.00000
                                                       325,56128
                                                                                6.80
                                                                                                  325.56128
 -0.51
        325.56128
                    325,56128
                                                                                                  328.14600
                                                       326, 74484
                                                                               -9.48
                                                                                     316.48356
  8.50
        325, 39227
                    328, 14688
                               326.76913
                                             2.75372
                                                                    2.86858
                                                                    2.98461
                                                                               -9.54
                                                                                      316, 35483
                                                                                                  328, 17505
                    328, 17585
                               326, 76935
                                             2.81137
                                                       326. 76611
  1.00
        325, 36368
                                                       326, 76511
                                                                    2.97719
                                                                               -9.63
                                                                                     316.38585
                                                                                                  328, 21701
        325, 31812
                    328, 21701
                               326.76758
                                             2,89898
  2.00
                                                                    3.00520
                                                                                                  328.24869
                                                                               -9.66
                                                                                      316.26938
  3. 88
        325, 28479
                    328, 24869
                               326. 76672
                                             2,96390
                                                       326, 75143
                                                                               -9.69
                                                                                      316.24866
                                                                                                  328, 27475
                                             3.01755
                                                                    3.82999
                    328, 27475
                               326.76599
                                                       326.75378
  4.00
        325.25728
                               326.76556
                                             3.06351
                                                       326.75446
                                                                    3.04860
                                                                               <del>-9</del>.71
                                                                                      316.21588
                                                                                                  328, 29730
                    328, 29730
  5.88
        325.23388
                               326, 76523
                                             3.16431
                                                       325.75221
                                                                    3.06394
                                                                               -9.73
                                                                                      316.19473
                                                                                                  328_31738
        325,21397
                    328.31738
  6. 80
                                                                    3.06800
                                                                               -9.74
                                                                                      316, 12933
                                                                                                  328, 38110
                    328. 38110
                               326, 76434
                                             3.23349
                                                       325.75827
 10.00
        325, 14761
                                                                                      316.02505
                                                                                                  328, 48193
                                                                    3.09542
                                                                               -9.72
 29.80
        325.04202
                    328.48193
                               326, 76196
                                             3.43991
                                                       326.75937
                                                                                                  328.54190
                                                                                      315.95969
                                             3.56812
                                                       326.75943
                                                                    3.09583
                                                                               -9.70
 30.00
        324.97379
                    328.54198
                               325, 75784
                                                                               -9.69 315.93494
        324.92667
                    328, 57187
                               326,74927
                                             3.64520
                                                       326, 75943
                                                                    3.09588
                                                                                                  328, 57187
BAND (NHZ)
           316.575
                     318.825 325.575 327.825
LMIN(DB)
                                    -8.46
                 -0.82
                           -1.59
LWAX (DB)
                  0.34
                           79.21
                                     8.97
LDEL (DB)
                0.36
                          79.72
                                     6.53
                         -667.33 -1000.81
PMIN(DEG)
                 -65.11
PMAX (DES)
                969, 31
                          433, 51
                                    30.66
PDEL (DEG)
               1834.41
                         1100.84
                                  1031.47
```

FILE: 4FREBBEA.DAN Out-of-band Rejection: PERK= 41.4 dB WIDTH= 8.888 Netz

P11

PHONON CORPORATION

FILE: 4FR8B82A.DAT (+SSCF)

PN_100834_826 FINAL_FUNCTIONAL TEMP:R PROTOFLIGHT /N DUAL_SXX

06-23-1997 HP8753, SSREF, SSREF, SSREF, SSREF, SSCF FERENCES: LOSS(08) = 28.92789 PHASE(DEG) = 291.5657 DELAY(US) = 1.872925 SLOPE(US/NHZ) = 0

BANDPASS CHARACTERISTICS NEASUREMENT

FREGLENCY (MHZ)	LOSS (DB)	PHASE (DEG)
315.000	53.69	983.12
315.728	57.12	1083.93
316.448	8,24	1837.64
317.160	0.09	798.94
317.880	8.23	370.87
318.600	8. 14	29.48
319.320	8.87	-389.85
329, 949	41.47	-385, 93
320.760	52.88	-597.91
321, 480	78, 94	-448.66
322, 200	49.38	-291.57
322, 929	55.88	62.14
323, 648	58.08	-19.46
324.368	57.21	301.78
325, 688	15.78	265, 48
325, 800	-8.29	-63.36
326, 528	-9. 18	-401.53
327.248	-8.86	-738.78
327.968	-0.46	-1874.74
328, 688	48.47	-1218.52
329.400	52.83	-1563.22

ELECTRICAL TEST DATA SHEET AEROJET PART: 1331576-4 PHONON PART: 188826, SERIAL: 1882 TESTED BY: 10RG A_ TITLE: MGR_ DATE: 62497 TIME: 10:00 APM TEST: FINAL FUNCTIONAL									
EDUIPMENT		3D SERIAL: 3418A87982 CAL DUE	: <u>10/12/97</u> : 7/8/97						
PARAGRI RED.		REQUIREMENT TITLE DO	RTA	P/F					
3.2.1,1 3.2.1,3	5.2.1 5.2.3	CENTER FREMLENCY &	. <u>6</u> C	P					
3.2.1.4		HI: 326.535/326.865 MHz 326.	785 Mtz 769 Mtz	<u>p</u>					
3.2.1.5	5.2.4	3 dB BANDNIDTH: LO: 2.8/3.8 MHz	.918 MHz .953 MHz	<u>p</u>					
3.2.1.6	5.2.5	PASSAGNO SYMMETRY LD: /8.5 dB	.1 d3	<u>Р</u>					
3.2.1.7	5.2.6	HI: /8.5 dB <u>8.</u> PRESENTED RIPPLE 316.575-318.825 NHz: /1.8 dB <u>8.</u>	.3 63	<u>P</u>					
3.2.1.8	5.2.7	INSERTION LOSS	.5 dB						
3.2.1,9	5.2.8	HI: 27.8/38.2 dB 28. INSERTION LOSS VARIATION	. <u>9</u> dB . <u>1</u> dB	<u>p</u>					
3.2.1.10	5.2.9	HI: -8.4/8.4 dB 8. AMPLITUDE BALANCE	. <u>1</u> dB	P					
3.2.1.11	5.2.10	LO, HI: /8.5 dB	.3' dB WIDTH (MHz)	<u>p</u>					
		WIBE: 1-313,331-1608 MHz: 45.9 DUNL: 313.668-315.565,	2.686						
!		319.615-324.585, 326.615-331.0 MHz: 48.1 PEAK: 35.8/ dB 48.1	9,999	p					
3.2.1.12	5.2.11	WIDTH: AB.6 MHz SHAPE FACTUR	8.998 Mb	<u> </u>					
3364	E 2 (2		.24 Unitless .23 Unitless	P					
3.6.1.19	3. C. IE	314.575-314.425,325.575-327.425 Miz BURL S11: 7.5/ dB9	.6	p P					
4.8.2	5.2.14	LIMITED FUNCTIONAL TESTS CENTER FREEMENCY: -0.1/8.1 MHz 3 dB BANDWIDTH: -0.06/8.06 MHz	Miz Miz	عطم اعام					
NONE	5.2.15	INSERTION LOSS: -6.5/8.5 dB DATA SHEET SUPPRY OPAGE/FAIL)	dB	卫					
PHONON CO 7 HERMAN SIMSBURY,	DRIVE	DH .	CAGE: 6Y858 TEL: 283-651 FAX: 283-651						

P13

PHONON CORPORATION FILE=4AH8B82A. DRT 14:84:26 65-28-1998 N_188834_826 FINAL_FUNCTIONAL TEMP:H PROTOFLIGHT /N DURL_SXX 6-23-1997 HP8753; SSCF, SSFF1X, SSREF SYSTEM BANDWIDTH= 2.25 FREDUENCY (NHZ): CENTER= 317.7 WIDTH= 9 INCR. = .05 REFERENCES: LOSS(DB) = 29, 19852 PHRSE(DEB) = 4185.612 DELAY(US) = 8 SLOPE(US/NHZ) = 8 PHOSE (BEB) = 743, 5253 RMS ERRORS: LOSS(DB)= .0843787 PLOT SCALES: LOSS: 10 DB/DIV LOSS 1 DB/DIV VS. FRED .9 NHZ/DIV LOSS TE DE/DIV LOSS 1 DB/BIU .. Т FREG .9 MHZ/DIU PEAK: LEVEL(DB)= 28.96238 FRER(DB/Z)= 316.5211 DELAY(US)=-3.065264 SIDELSBE(DB)=-41.7466 ENERGY: LEVEL (DB) = 29.36138 CENTER (NHZ) = 317.7214 WIDTH (NHZ) = 3.851783 SKEN (NHZ) = 1.129812E-62 L(DB) LD(MHZ) HI (MHZ) CTR(MHZ) WID (MHZ) AV-CTR (MHZ) AV-WID (MHZ) AV-SL (DB) LOX (MHZ) HIX (MHZ) -0,23 316.52186 316.52166 316.52106 316.52106 316, 52186 £. 00000 316,52166 6.00006 1.00 0.50 316.38791 319.84599 317.71695 2,65808 -13.52 316.38791 319, 04599 317.69617 2.64953 1.00 316.34768 317.71594 319.08432 319.88432 2.73672 317,69830 -14.99 316,34760 2,73397 2.64521 2.00 316.39148 319.14670 317.72409 277178 -15.82 316.30148 319, 14670 317.71741 3.00 317.72577 316.26672 316, 26672 319, 18478 2.91886 317.71744 2.83413 -17.68 319, 18478 4. 88 316.23871 319, 21619 317.72745 2,97748 316_23871 317,71862 2, 87898 -28.42 319, 21619 5.00 316.21457 319.24350 317.72903 3.02893 317.71892 2.57899 -29. 38 316, 21457 319, 24350 317.73080 6. 90 316.19388 319, 26773 3.07385 317.71884 2.98736 -23.58 316, 19388 319.26773 10.00 316, 12939 319, 34897 317. 73517 3.21158 317,71985 2.92395 -27.25 316, 12939 319, 34897 20.00 316.02585 317.74008 319, 45432 2.93362 3, 42847 317.72144 -41.14 316.82585 319, 45432 30. 99 315.96138 319.52649 3.56516 317.74398 315.96133 317.72137 2,93396 **-47.85** 319.52649 48.88 315.93256 319.55920 317.74588 3.62665 2.93400 -58.29 315.93256 317.72137 319.55920 BAND (MIZ) 316.575 318.825 LMIN(DB) **-0.** 16 LMAX (DB) 8.20 LDEL (DB) 8.36 PHIN (DEG) -1262,45PMAX (BEG) 1255, 49 YEL (DEB) 2517.94 le: 48HBBBBB DAT

Passband Symmetry = 8.1 dB

PHONON CORPORATION

Channel 15 Bandpass Filter

IF Filter (S/N: 1331559-1, S/N: 227-005)

APPEN	VDIX.	A
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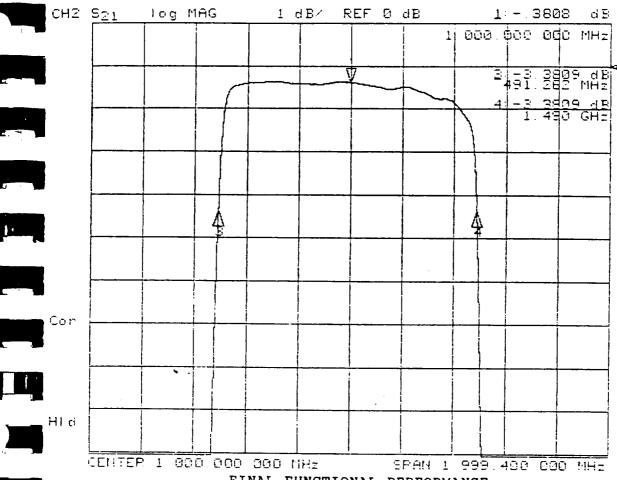
ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL1000-1000-10SS1 S/N P227-005 AEROJET 1331559-1 REV.

P	COMPAND AND AND AND AND AND AND AND AND AND	-10°C	+15°C	+40°C
{	7) UPPER 3.0 dB BANDEDGE	1 <u>490.04</u> мHz (1480.0-1500.0)	1 <u>488.57</u> Mhz (1480.0-1500.0)	1487.46MHz (1480.01500.0)
{{	B} LOWER 3.0 dB BANDEDGE	4 <u>91.26</u> MHz (480.0-500.0)	4 <u>90.54</u> Mhz (480.0-500.0)	୳ <u>୪୩.୪୩</u> MHz (480.0-500.0)
{!	9) 3.0 dB RELATIVE BANDWIDTH	<u>948,78</u> MHz (980.0-1020.0)	945.03Mhz (980.0-1020.0)	9 <u>97.51 m</u> Hz (980.0-1020.0)
{	10} ADD {7} AND {8} ÷ 2 =	<u>990.С5</u> мнz (мои 0.0001)	<u>989.56</u> MHz (1000.0 NOM)	<u> </u>
{1	0a) RECORD MEASURED TEMPERATURE	- <u> 1.6</u> °C (-15.0 TO -10.0)	+ <u>15.6</u> °C (12.5 TO 17.5)	२ <u>५०.८</u> °C (40.0 TO 45.0)
•	F) ATTACH TRANSMISSION LOSS ERFORMANCE X-Y PLOT	<u> </u>	(√)	(\forall)
Α	ASSBAND RIPPLE CCEPTANCE TEST PROCEDURE 3-0005-02 PARA 4.5.4	-10°C	+15°C	+40°C
{1	1a) MIN INSERTION LOSS FREQ	6 <u>95.09</u> MHz	6 <u>75.16</u> Mhz	6 <u>75.10 MHz</u>
	MIN INSERTION LOSS PERFORMANC	E - <u>0,36</u> dB	- <u>0.39</u> dB	- <u>0.41</u> dB
{1	1b) 75% BW LOWER BANDEDGE FREQ	5 <u>27.79</u> MHz	526.69 Mhz	5 <u>24.78</u> MHz
	75% BW LOWER BANDEDGE I.L. PERI	F - <u>0.60</u> dB	0.65 dB	- <u>0.69</u> dB
{1	1c) 75% BW UPPER BANDEDGE FREQ	12 <u>77.79</u> MHz	12 <u>76.69</u> Mhz	12 <u>74.78</u> MHz
	75% BW UPPER BANDEDGE I.L. PERF	- <u>0,60</u> dB	- <u>0.65</u> dB	- <u>0.69</u> dB
{1	1d) PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	<u>O.24</u> dB	<u>0.76</u> dB	<u>O.28</u> dB
{1	1e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})	<u>0.24</u> dB	0.26 dB	0.28 dB

Р	re	pa	re	d i	in	а	cc	0	rd	a	nce	with	٨	MIL-S	ST	D-1	00	
_	_		-	_		_	_	_		_	_		_					

CONTRACT NO.	SIZE A	CAGE CODE 57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APAJ.DOC	SHEET	13



FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P227-005

-10C DATA

MARKER PARAMET OPR: R. HOGGATT DATE FEB 03 1997 phone i 2

OFF

OFF

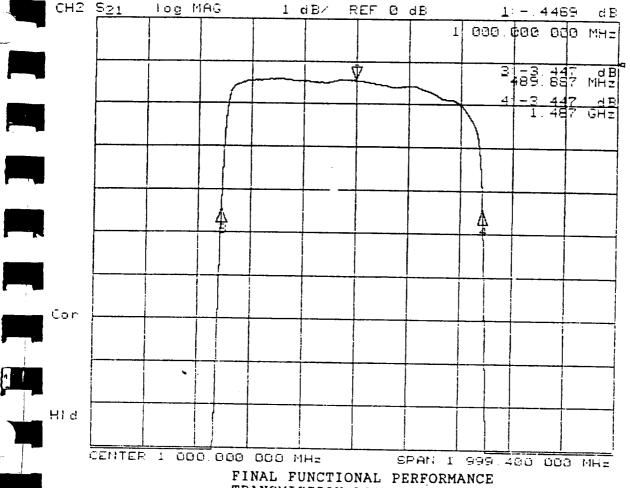
	MARKER 1	550.000000 MHz OFF	1000.000000 MHz 3808 dB
	MARKER 2	1450 000000 MHz OFF	990.653385 MHz OFF
	MARKER 3	525.000000 NHz OFF	491.262205 MH±
, ja	MARKER 4	1375.000000 MHz OFF	1490.044565 MHz -3.3809 dB
	MKR STIMULUS OFFSET	0.990000 MHz 0 dB	0.000000 MHz C dB
- 34	REFERENCE MARKER PLACEMENT MARKER SEARCH	OFF CONTINUOUS OFF	OFF CONTINUOUS OFF
	TARGET VALUE MARKER WIDTH VALUE	-3 dB -3 dB	-3 dB -3 dB

OFF

OFF

MARKER TRACKING

Č CH	42 <u>521</u>	log Mf	aG	1 c	IB/ F	EF 0	, -	.1			d B	1
								1 00	0. Ø00		•	
						7					1 dB MHZ	ľ
								1	1	488	I dB GHz	
			4					A				
Co	or											
		\ .										
HI	d											
Hi	CENTER	1 000	000	906 M	4 -		PAN 1	903	450	000	1411	
1			FIN TRA	AL FU NSMIS	NCTIO	NAL PE LOSS	ERFORM			000	nez	
MA	PKES SAS	CHICT	+15	C DAT	'A	27-005			_		_	
	RKER PAR	mne i	OPR	: R.	HOGGA	TT DA	ALE LER	031	397 artin	el J	<u>:</u>	
MA MA	RKER 1				550 OFF	. 6000:	00 MH:		1000 413			MHz
MA	RKEP 2				1450 OFF	. 0000	00 MH:		989 OFF	9.55	5293	MHz
MA	RKER 3				525 OFF	. 0000	30 MH:		490 -3.41			MHz
MA	RKER 4				1375 OFF	. 50000	30 MH:		1486 -3.41			MHz
MK	R STIMUL	US OFF	SET		0 db	. 0000(30 MH:	2	0 dE		9000	MHz
PLI	FERENCE ACEMENT				OFF CONTI	NUOUS			OFF CONTI	1011/1	IS	
TA:	RKER SEA RGET VAL RKER WID	IJΕ	IF		OFF -3 dB -3 dB	~ -			OFF -3 dB	}	- -	
	RKER TRA				OFF OFF				-3 dB OFF OFF	į		



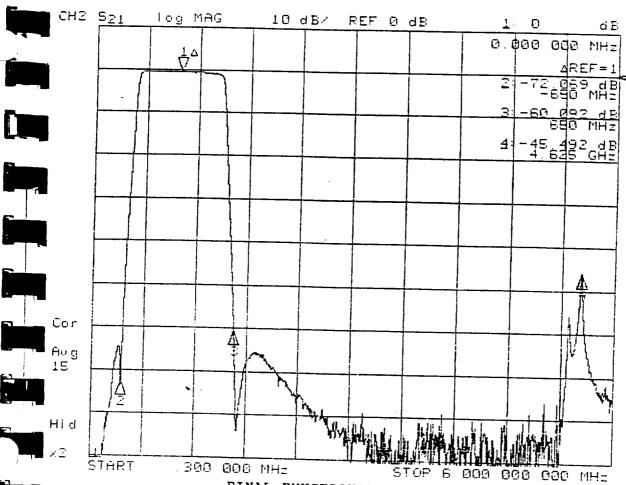
FINAL FUNCTIONAL PERFORMANCE TRANSMISSION LOSS SERIAL NO. P227-005

+40C DATA

MARKER PARAMET OPR: R. HOGGATT DATEFER 03 1997 Annel 2

MARKER 1	550.000 00 0 MHz OFF	1980.000000 MHz 4469 dB
MARKER 3	1450.000000 MHz OFF	988.644081 MHz OFF
MARKER 3	625.000000 MH≥ OFF	489.887565 MHz -3.447 dB
MARKER 4	1375.000000 MH± OFF	1487.400598 MHz -3.447 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MARKER SEARCH TARGET VALUE MARKER WIDTH VALUE	OFF CONTINUOUS OFF -3 dB -3 dB	OFF CONTINUOUS OFF -3 dB -3 dB
MARKER TRACKING	OFF OFF	OFF OFF

APPENDIX A A	CCEPTAN	NCE TEST REPOR	RT	
BANDPASS FILTER MODEL HL100 AEROJET 1331559-1 REV				
PASSBAND RIPPLE (CON'T)				
{11f} RECORD PASS/FAIL (0.5 d	B MAX)	PASS/FAIL	PASSFAIL	PASS/FAIL
{11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S)		(√)	(\forall)	(\lambda)
OUT-OF-BAND REJECTION ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.5.5 Fc=1000.0 MHz. REF {5A} FOR INSERTION LOSS @		-10°C	+15°C	+40°C
{12} WORST CASE REJECTION FR 0.300 MHz TO 350.0 MHz	ОМ	- <u>(, 식, 〇</u> dB (40.0 dB MIN)	- <u>८५.।</u> dB (40.0 dB MIN)	- <u>ሬዛ.긴</u> dB (40.0 dB MIN)
{13a} WORST CASE REJECTION F	ROM	- <u>රට l</u> dB (40.0 dB MIN)		- <u>60.5</u> dB (40.0 dB MIN)
{13b} WORST CASE REJECTION F	ROM	- <u>식5.5</u> dB (40.0 dB MIN)	- <u>५८.।</u> dB (40.0 dB MIN)	- <u>47.4</u> dB (40.0 dB MIN)
{13c} RECORD MEASURED TEMPE	RATURE	- <u>11.</u> ℃ (15.0.TO 10.0)	1 <u>15.6</u> °C	+ <u> </u>
{14} ATTACH REJECTION PERFOR X-Y PLOT(S)	MANCE	(-15.0 TO -10.0) (√)	(12.5 TO 17.5) (√)	(40.0 TO 45.0) (√)
TEST PERFORMED BY 7. HOGE	ATT I	DATE 2/3/47	1 12	
NOTE IF TEST WITNESSED BY AES	SD:	GSI: No	ot Witnessed	
***** END OF FUNCTIONAL PERFO	RMANCE	TEST ****	nis time. DLD	
OUTLINE AND MOUNTING DIMENS {16} REFERENCE CUSTOMER DRA	SIONS VE WING 13:	RIFICATION 31559		
DESCRIPTION OF MEASUREMENT		DIMENSI TOLERAI	ON AND ACTUAI	
OVER ALL LENGTH		3.50 ± .0	3 3 5	DC+
MOUNTING HOLE CENTER		0.125 <u>+</u> .0	010 <u> </u>	13_
BETWEEN UPPER MOUNTING HOL	.ES	3.250	3,2	46
BETWEEN LOWER MOUNTING HOI	_ES	3.250	<u>_3,</u> 3	46
Prepared in accordance with MIL-STD-100 CONTRACT NO.	1 0175	CACE OCCE	51410	
	SIZE A	57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC	FILE: ACAI	D/63/0502APAJ.DOC	SHEET	14



FINAL FUNCTIONAL PERFORMANCE REJECTION PERFORMANCE SERIAL NO. P227-005

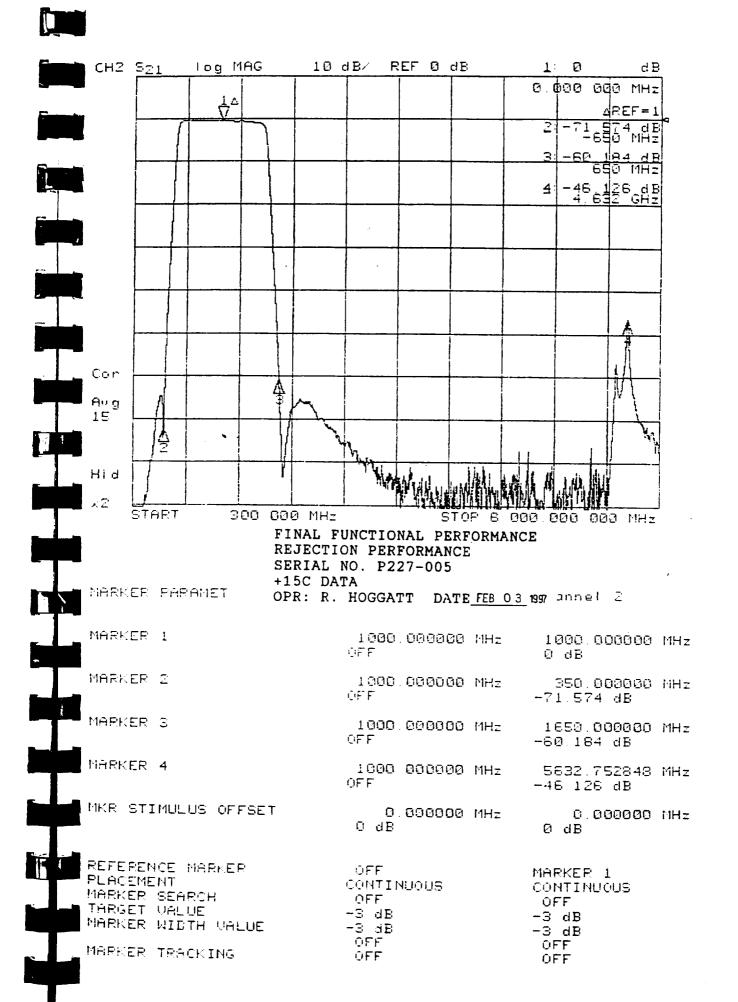
-10C DATA

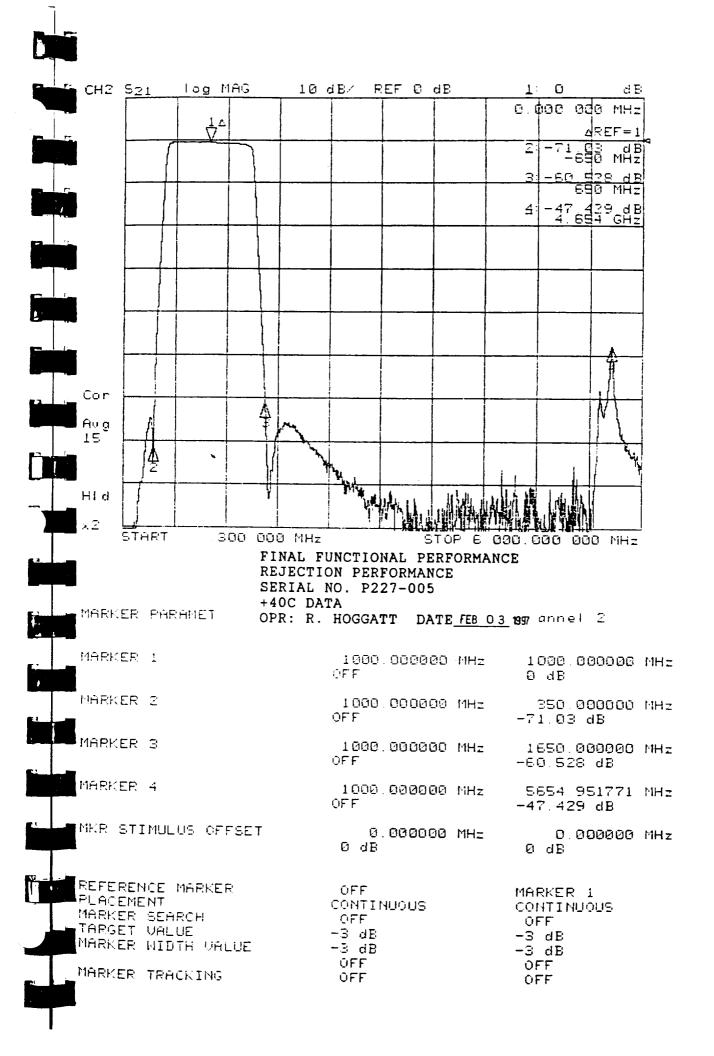
MARKER PARAMET

OPR: R. HOGGATT DATE FEB 03 1997 annel 2

MARKER 1 1000.000000 MHz 1000 000000 MHz OFF O dB MARKER 2 1000.000000 MHz 350.000000 MHz ÛFF. -72.069 dB MARKER 3 1000.000000 MH= 1650 000000 MHz OFF -60.092 dB MARKER 4 1000.000000 MHz 5625.018861 MHz -45.492 dB MKR STIMULUS OFFSET 0.000000 MHz 0.000000 MHz 0 dB O dB REFERENCE MARKER ÛFF MARKER 1 PLACEMENT

CONTINUOUS MARKER SEARCH CONTINUOUS OFF TARGET WALUE OFF -3 dB MARKER WIDTH VALUE -3 dB -3 dB -3 dB OFF MARKER TRACKING OFF OFF OFF





Α	P	Р	Е	N	D	X	A

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL1000-1000-10SS1 S/N (227-005) AEROJET 1331559-1 REV. ►

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6

(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +21.9 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT

{24} TEST POINT MATRIX

_	REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
	F1	1.0	MHz	<u>- </u>	F11	1000.0	MHz	-0.48 dB
	F2	10.0	MHz	<u>- 93.3 </u> dB	F12	(*) 1100.0	MHz	-0.58 dB
	F3	100.0	MHz	<u>-91.7</u> dB	F13	(*) 1200.0	MHz	-C.59 dB
	F4	300.0	MHz	<u>-66.€</u> dB	F14	1300.0	MHz	-0.79 dB
	F5	400.0	MHz	- <u>37.0</u> dB	F15	1400.0	MHz	-1.02 dB
	F6	500.0	MHz	<u>- 7.0 i</u> dB	F16	1500.0	MHz	-6.22 dB
	F7	600.0	`MHz	<u>-0.49</u> dB	F17	1600.0	MHz	-41.2 dB
	F8	700.0	MHz	<u>-0.45</u> dB	F18	1700.0	MHz	-83.6 dB
	F9	(*) 800.0	MHz	<u>·0.49</u> dB	F19	2000.0	MHz	-67.0 dB
	F10	(*) 900.0	MHz	- <u>0.52</u> dB	F20	5000.0	MHz	-89.6 dB
	TEST	PERFORM	ED BY:	R. HOSGATT	DAT	E 2/4/97	- (ic	
NO	TE IF	TEST WITN	IESSED	BY AESD	GSI _		lot Wit	inessed
****	* END	OF BANDE	PASS CI	HARACTERISTICS TE	ST *****			ime. DLD

FUNCTIONAL PERFORMANCE TEST

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.1

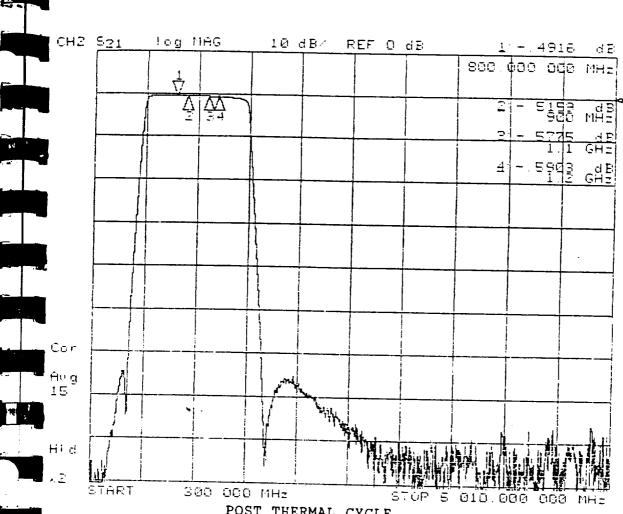
BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX A PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

- a.) VSWR PER ATP PARA 4.5.1.
- b.) INSERTION LOSS PER ATP PARA 4.5.2

***** END OF BANDPASS CHARACTERISTICS TEST *****

- c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
- d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
- e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
- f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
- g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.

Prepared in accordance with MIL-STD-100				`
CONTRACT NO.	SIZE A	57032	DWG. NO. 63-0005-02	REV.
DADEN-ANTHONY ASSOCIATES INC.	FILE: AC	AD/63/0502APAJ.DOC	SHEET	11



POST THERMAL CYCLE PASSBAND CHARACTERISTICS SERIAL NO. P227-005

AMBIENT

MARKER PARAMET OPR: R. HOGGATT DATE FEB 04 1997 onnel 2

	•	
MARKER 1	1000 000000 MHz OFF	860.000000 MHz - 4916 dB
MARKER 2	1000.000000 MH± CFF	900.000000 MHz - 5159 dB
MARKER 3	1000.000000 MH± 0FF	1100.000000 MH≥ - 5775 dB
MARKER 4	1000.00000 MHz OFF	1280.000000 MHz - 5903 dB
MKR STIMULUS OFFSET	0.000000°MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER PLACEMENT MAFKER SEARCH TARKET VALUE	OFF CONTINUOUS OFF -3 dB	OFF CONTINUOUS OFF -3 AR

-3 dE

OFF

OFF

MARKER WIDTH WALUE

MARKER TRACKING

-3 dB

-3 dB

OFF

OFF

	-

GAIN STABILITY AND GAIN COMPRESSION FOR MIXER/AMPLIFIERS AND IF AMPLIFIERS

					_
)
)

GAIN-TEMPERATURE SENSITIVITY FOR MIXER/AMPLIFIERS AND IF AMPLIFIERS

Channel No.	-	2	3	4	\$	9	7	•	6	10	11	12	13	14	15
Specification (+/-dB/°C)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.04	90.0	90.0	90.0	90.0	0.02
Measured (dB/°C)	-0.009	-0.009 -0.015	-0.009	-0.013	-0.013	-0.017	-0.02	-0.011	-0.025	-0.025	-0.025	-0.025	-0.025	-0.025	-0.017
									+0.005	+0.005	+0.005,	+0.005,	+0.005,	+0.005,	
											-0.014	-0.014	-0.01	-0.02	_
Total	-0.009	-0.015	-0.009	-0.013	-0.013	-0.017	-0.02	-0.011	+0.005,	+0.005,	+0.005,	+0.005,	+0.005,	+0.005,	

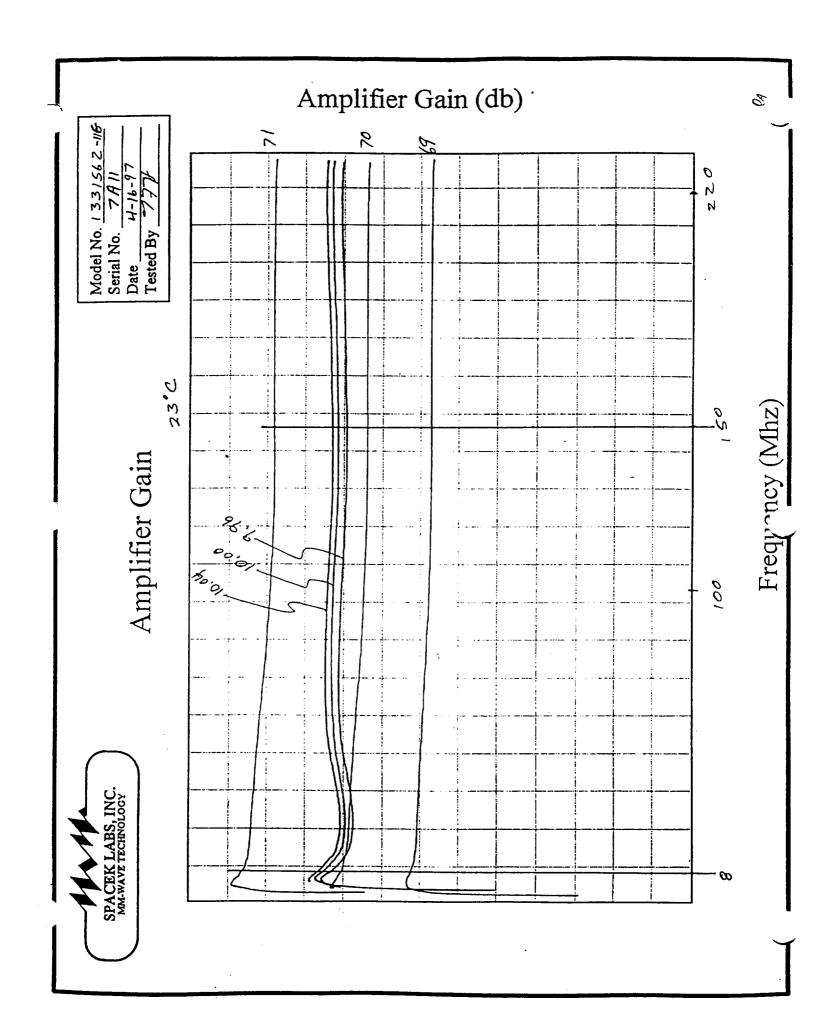
Channel 1 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-11, S/N: 7A11)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLAII	<u>VESS TEST: ATP PA</u>	<u>AKAGKAPH</u>	<u>5.1.3</u>			
_	NESS SPEC. GAIN (dB)ppK	FLATNESS	ACC R	ŒJ		
0,27			QA 			
GAIN VERSU	IS VOLTAGE SEN	SITIVITY TI	EST: ATP P	'ARAGRAP	°H 5.1.4	<u>4</u>
AMPLIFIER VOLTAGE		ΔG/ΔV	SPEC.	ACC	REJ	
	70.31	1,88	2.0	QA _1_		
Δ G V -	<u>0.15</u> dB			DATE	ACC :	<u>REJ</u>
PART NO	D. <u>1331562- [] </u>	_ SPA	CEK QA	4-16-97	QA 1	
SER NO.	7A11	TEST	FAILURE:			_
TESTED	BY: 77	_ FAILURI	E ANALYSI	S NO		_
END DA	TE: <u>4-16-97</u>				_	
END TIM	ie: <u>1630</u>		Spacek Lab 212 E. Gut	•	•	

Santa Barbara, CA, 93101



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 70,00			25 Y.	
		* 441	0.035dB/°C	OA `	
T2 + 28	GT2 70.25			1	
		• -035	0.020dB/*C		OA -
T3 + 8	GT3 70.95				i
		. 1019	0.035dB/°C	OA	·
T4 -6	GT4 71, 22			1	

* Perform the following calculations and record on the TDS

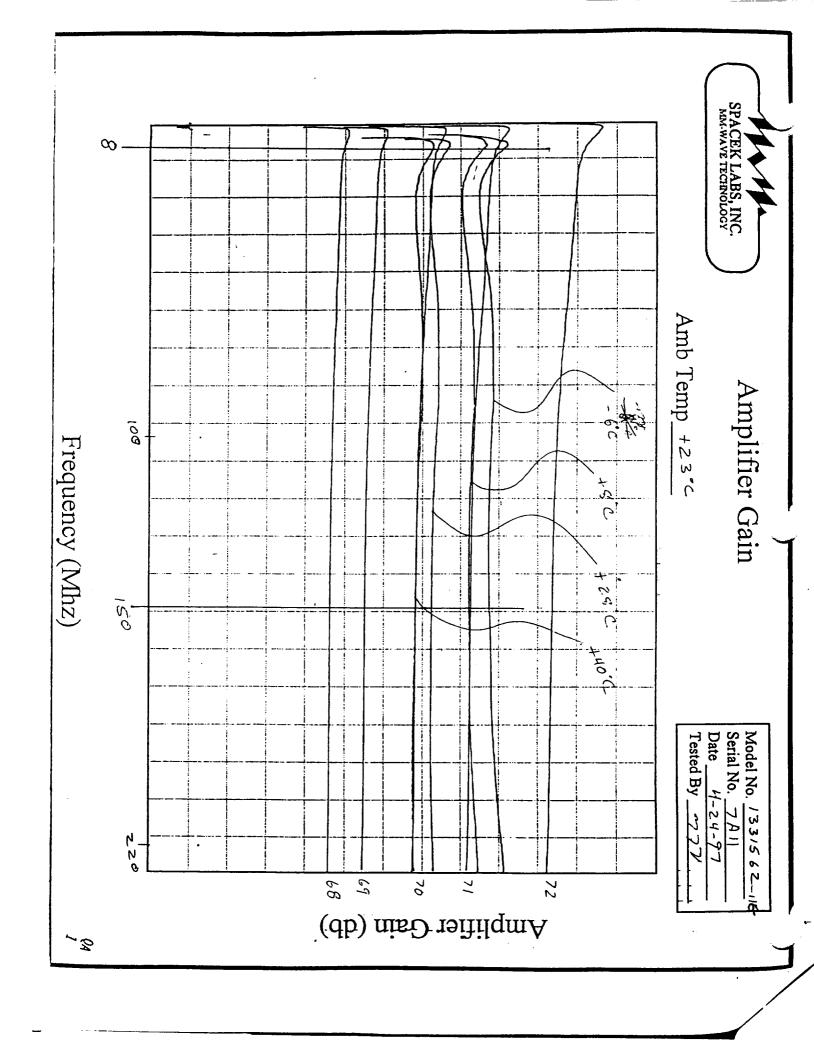
$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}}$$

$$\Delta G_{ToTAL} = \Delta G_{V} + \Delta G_{T} + 0.4 = \frac{1.23.4}{1.27} dB \text{ Spec 1.4dB} \qquad ACC \qquad REJ \qquad 1$$

DATE ACC REJ

PART NO. <u>1331562- 116-</u>	SPACEK QA	4-2 <u>4-9</u> 7	QA
SER NO	TEST FAILURE:		· ·
TESTED BY:	FAILURE ANALYSI	S NO	
END DATE: 4-24-97			
END TIME: 1600	Spacek Labs 212 E. Gutie		

Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DASH#

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm) &CC~REJ
XXXXXXXX	10	2.25	0.75	1.0 (8-)
X	20			
X X	50			
X X X X X X X X X	100	2.30	0.70	1.0
X	150	2,25	0.75	1.0 5-
<u> </u>	200			
X	400			
X	50 0			
X	1000			
X	1500			

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4-20-97 AMBIENT ROOM TEMPERATURE °C: 23

AMPLIFIER

AMPLIFIER

OUTPUT

OUTPUT

AMPLIFIER

POWER

POWER

Y FACTOR NOISE

AMBIENT (dBm)

(-77 K)(dBm)

(dB)

FIGURE (dB)

~22.3

- 25.7

3.4

1.36

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- 11 & ______</u>

SPACEK QA

SER NO. 7A1/

TEST FAILURE:

TESTED BY: /// FAILURE ANALYSIS NO. _

END DATE: 4-20-97

Spacek Labs, Inc. 212 E. Gutierrez St.

END TIME: <u>4:00 ρm</u>

Santa Barbara, CA, 93101

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 1-5-98 AMBIENT ROOM TEMPERATURE °C: +2 Z

UUT TEMP °C.	UUT CURRENT (MA)	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ĄCC	REJ
-6	43.3	-21,80	-23.60	1.80	3.45	3.5	OA .	
+8	43.4	-21.90	-23.70	1.80	3.45	3.5	-J-	
+28	43.5	-22.20	-24.00	1.80	3.45	3.5	0A.	, ===
+40	47.5	-22.40	- 24.15	1.75	3,55	3.5	(OF .
Noise fig	gure change_ Above data	Spec <u>O. </u> dB Sp to be taken with	is, 3dB peak pec is .5dB peak h the Daden file	to peak on - to peak on - ter, except on	-11+hm -19 -20	(Z~)	REJ	

NEΔT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

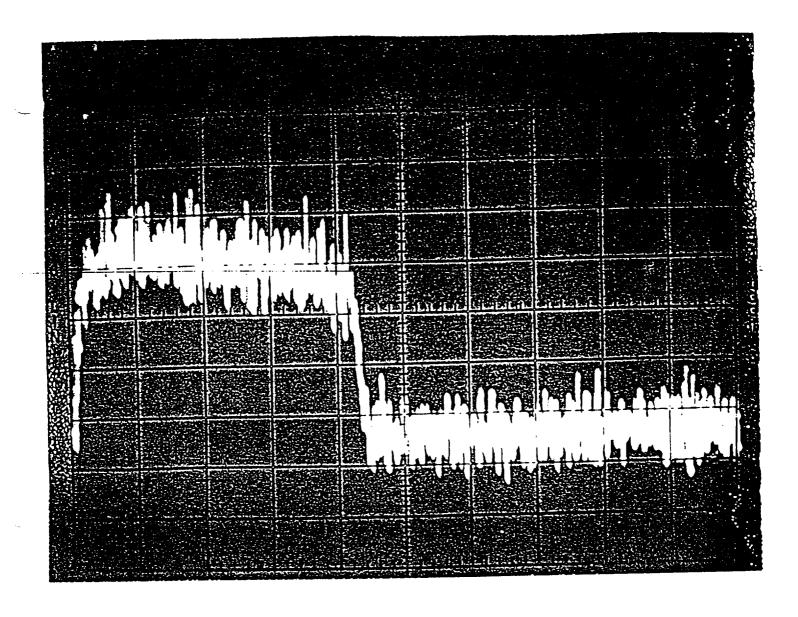
Date: 1-19-98 Ambient Room Temperature °C: 23

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.068

Record Nps(K)0.07 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

	ACC REJ	
PART NO. <u>1331562-JI&</u>	SPACEK QA DATE ACC REJ SDAR 98-000	23
SER NO	TEST FAILURE:	
TESTED BY: DA	FAILURE ANALYSIS NO	
END DATE: 1-19-98		
END TIME: 4:00 pm	Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara,CA,93101	_



5.4.14 Noise Power Profile

Model No.: 1331562-/16

Serial No.: 7A11

Date: 1-21-98

Tested by: 08

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.

OF

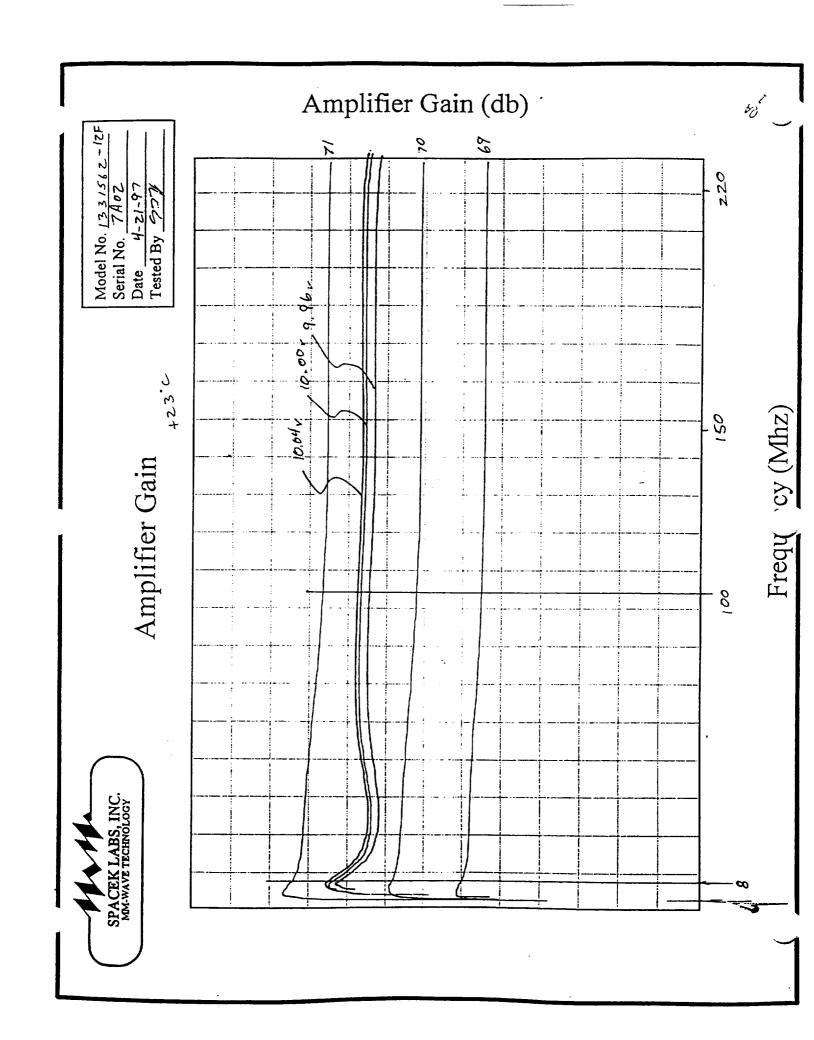
Channel 2 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-12, S/N: 7A02)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST: ATP PARAGRAPH 5.1.3

GAIN FLATN (dB)ppK 2 2 ア	ESS SPEC. GAIN (dB)ppK	FLATNESS	ACC QA 1	REJ —		
GAIN VERSU	S VOLTAGE SENS	SITIVITY TE.	ST: ATP	<u>PARAGRAI</u>	PH 5.1.4	<u>4</u>
AMPLIFIER VOLTAGE	GAIN READING (dBm)	ΔG/ΔV	SPEC.	ACC	REJ	- -
10.04	` ,	1.87	2.0	QA _1		
	<u>0.75</u> db			DATE	<u>ACC</u>	<u>REJ</u>
	. <u>1331562-12</u> F		EK QA	4-21-97	QA 1	
SER NO.	<u> 7Aoz</u>	TEST	FAILURE	E:		-
TESTED 1	BY: <u>-77/</u>	FAILURE	ANALYS	SIS NO		_
END DAT	E: <u>4-21-97</u>	_				
END TIM	E: 77 4:007	m		abs, Inc. utierrez St. rbara,CA,93	5101	



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 70.50				
		0,015	0.035dB/°C	ŲΑ	
T2 +28	GT2 70,68			1	
		0,026	0.020dB/°C		OA.
T3 + 8	GT3 71.20				i
		* 0,013	0.035dB/°C	OA	
T4 -6	GT4 71,38			1	

• Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}}$$

$$i = 1,2,3,4$$

$$\Delta G_T = 0.88 - dB$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = \frac{1.43}{0} dB$ Spec 1.4dB ACC REJ

DATE ACC REJ

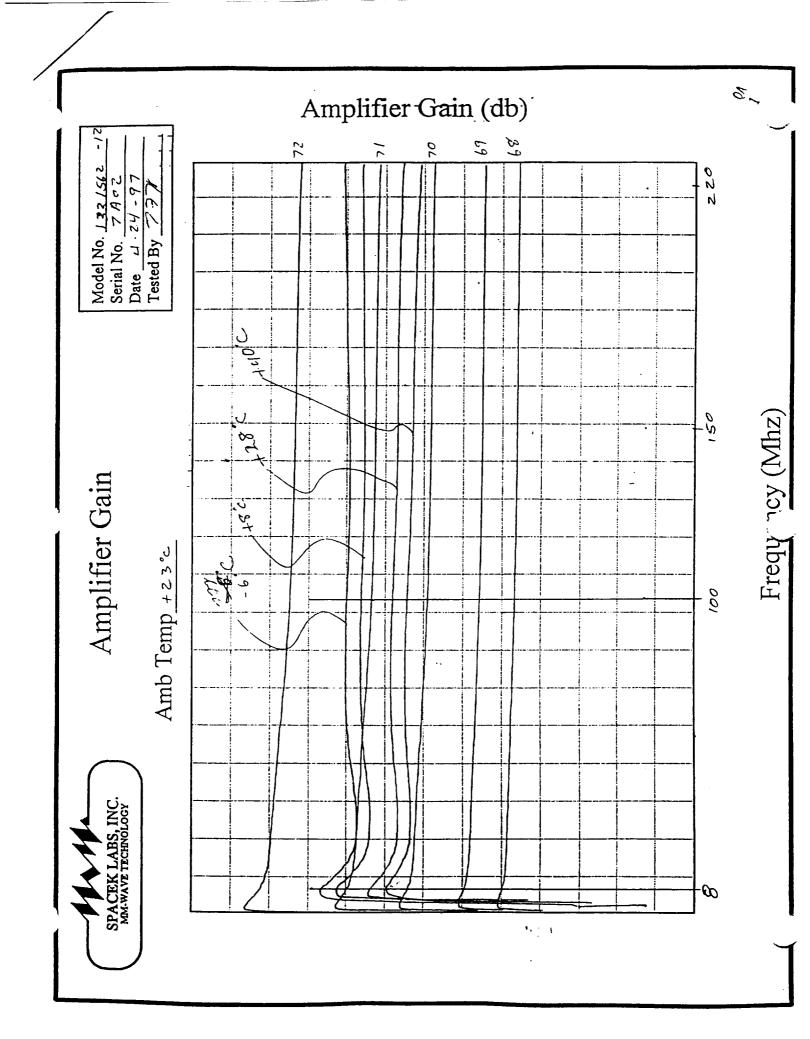
4-24-97 QA PART NO. 1331562-12 F SPACEK QA

SER NO. ____7A0Z TEST FAILURE:

TESTED BY: FAILURE ANALYSIS NO.

END DATE: 4-24-97 Spacek Labs, Inc.

END TIME: 4:007M 212 E. Gutierrez St. Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

\mathbf{r}	Λ	CLI	#
	м	SП	#

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC	וחמ
X X X X X X X X X	10	0.7	1.0		100
X X	50	0.6	1.0	0/10/1	
<u> </u>	100	0,6	1.0	<u> </u>	
X	150	•			
<u> </u>	200				
X	400				
X	500				
X	1000				
X	1500				
					

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4/20/37AMBIENT ROOM TEMPERATURE °C: 23

AMPLIFIER OUTPUT POWER AMBIENT (dBm)	AMPLIFIER OUTPUT POWER (-77 K)(dBm)	Y FACTOR (dB)	AMPLIFIER NOISE FIGURE (dB)
-24.0	-27.7	3.7	1.1

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562-(と</u> F	SPACEK QA	DATE ACC REJ
SER NO. 7AOZ	TEST FAILURE	:
TESTED BY:	FAILURE ANALYS	SIS NO
END DATE: 4/20/97	*	
END TIME: 4:00 PM	Spacek Lab 212 E. Guti Santa Barba	
		

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 7-2-97AMBIENT ROOM TEMPERATURE °C: +22

UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.0	-23.10	-25.15	2.05	3.0	3,2		
+8	43.0	-27,30	-25,30	2.0	3.1	3.2	0,	
+28	43.1	-23.60	-25.60	2.0	3.1	3.2	1/2	
+40	43.2	-23.80	- 25.80	2.0	3.1	3.2	- 1 - 1	
Noise figure change O. I dB Spec is .5dB peak to peak on -20 ACC REJ NOTE: Above data to be taken with the Daden filter, except on the -19 unit.								

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

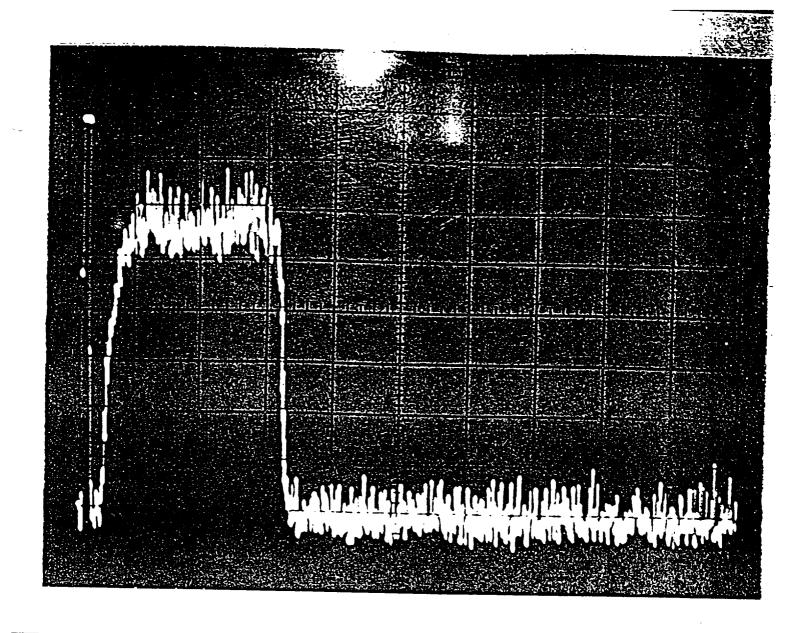
Date: 7-1-97 Ambient Room Temperature °C: + 25

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.254

Record Nps(K) 0.07 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ
PART NO. <u>1331562- 12 F</u>	SPACEK QA	DATE ACC REJ 7-2-97
SER NO	TEST FAILURE:	
TESTED BY: 0.2	FAILURE ANALYSIS	NO
END TIME: (600	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.



5.4.14 Noise Power Profile

Model No.: 1331562-/2F

Serial No.: 7A02

Date: 7-3-97

Tested by: At

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width:

10 Khz

Scan Time:

3 sec/Div.

No video filter.

Channel 3 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-13, S/N: 7A03)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLAT	IESS TEST: ATP PA	<u>ARAGRAPI</u>	<u> 1 5.1.3</u>	
GAIN FLATN (dB)ppK	ESS SPEC. GAIN (dB)ppK	FLATNESS		ej Ej
0.30	0.5	·	<u> </u>	
GAIN VERSU	IS VOLTAGE SENS	SITIVITY T	EST: ATP PA	ARAGRAPH 5.1.4
AMPLIFIER	GAIN'		SPEC.	
VOLTAGE	READING (dBm)	$\Delta G/\Delta V$	ΔG/ΔV	ACC REJ
10,04	70.60 70.48	2.5	2.0	
$\Delta Gv = $	0,2 dB			DATE ACC REJ
PART NO	D. <u>1331562-13 F</u>	SPA	CEK QA	9-4-97 QA
SER NO.	7A03	TES:	T FAILURE:	
TESTED	BY: 7	FAILUR	E ANALYSIS	3 NO
END DAT	ГЕ: <u>8-7-97</u>			
	E: 1600		Spacek Lab 212 E. Guti Santa Barb	

Amplifier Gain (db)

Model No. 1331562-13 F
Serial No. 7A03
Date 8-6-97
Tested By 77%

Gair	
lifier	
Amp	

7	20	67	89	29			<u></u>
.							
					•		
					•		
9 6.							
6						-	
80.01							
1,00							
							700
							7
		11 -					
							-
							1
 							
	+		++		•		_
		4	+		-	<u> </u>	-
					_		┙,

Freq (Mhz)

TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nomir (°C)	nal Temperature	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1	+40	GT1 70,35			₹	
			. ,019	0.035dB/°C	na.	1
T2	+28	GT2 70,58	the state of the s))
			* ,027	0.020dB/°C		OA
ТЗ	+8	Gr3 71,12				Un 1
			• 0/7	0.035dB/°C	0.0	
T4	-6	GT4 71,29		The state of the s	P	}

• Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}}$$

$$i = 1,2,3,4$$

$$\Delta G_T = \frac{0.94}{dB}.$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = 1.54 \text{ dB Spec 1.4dB} \qquad ACC \qquad REJ$

		DATE ACC REJ
PART NO. <u>1331562-13</u> F	SPACEK QA	9-5-97 (QA
SER NO. <u>7A03</u>	TEST FAILURE:	
mnamma nu Th		

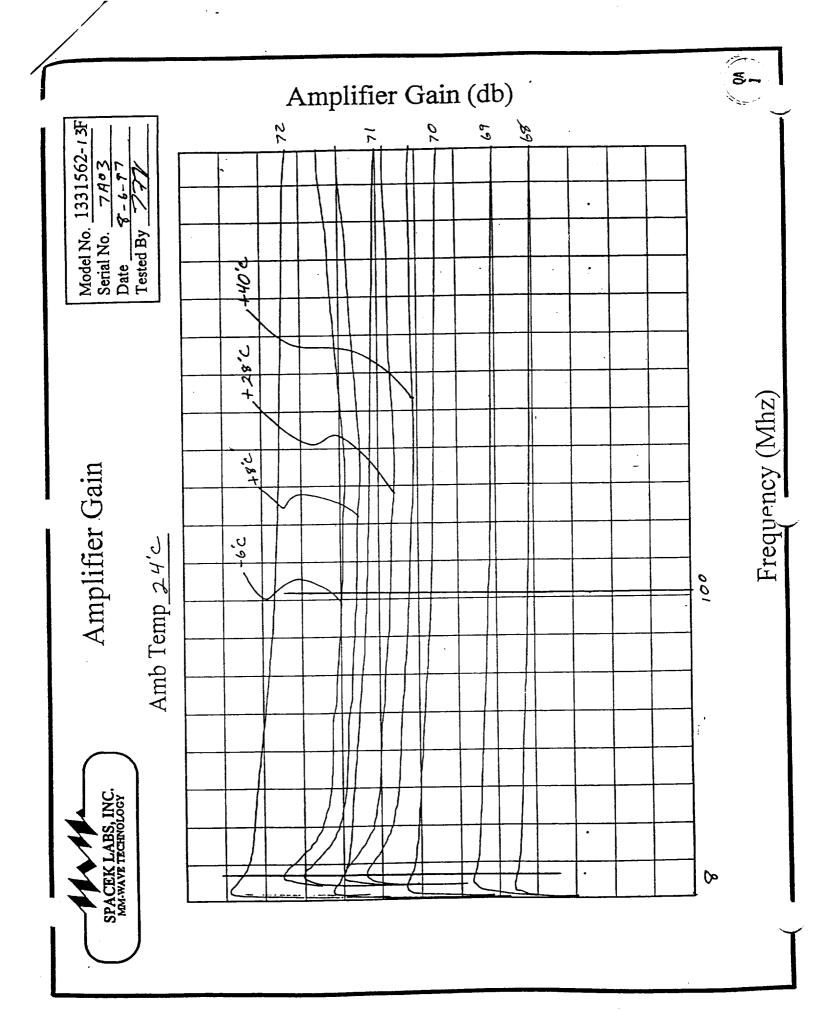
TESTED BY: FAILURE ANALYSIS NO.

END DATE: <u>8-7-97</u>

END TIME: <u>/600</u>

Spacek Labs, Inc.
212 E. Gutierrez St.

212 E. Gutierrez St.
Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DASH#					
		P2	OUTPUT	SPEC.	
11 12 13 14 15 16 17 18 19 20	FREQ.	COMP	COMP.	COMP.	
	(MHz)	(dBm)	at+10(dBm)	PT.(dBm)	
\overline{X} \overline{X} \overline{X} \overline{X} \overline{X} \overline{X} \overline{X} \overline{X} \overline{X}	10	-2,2	_0.8_	1.0	<u> </u>
X	20				
хх	50	-2.5	_0.5_	1.0	<u> </u>
$X \times X \times X \times X \times X$	100	-2.6	0.4	1.0	<u> 8-</u>
X	150				
X X X X X X X	200				
X	400				
X	500				

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

1000

1500

DATE: 8-7-97 AMBIENT ROOM TEMPERATURE °C: 21

X

X

AMPLIFIER AMPLIFIER **AMPLIFIER** OUTPUT OUTPUT Y FACTOR NOISE POWER POWER FIGURE (dB) (-77 K)(dBm)(dB) AMBIENT (dBm) -27.8 3.6 -24. Z

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562-13</u> F	SPACEK QA	DATE ACC REJ
SER NO	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	3 NO
END DATE: 8-7-97	Spacek Labs,	Tno
END TIME: 1:30pm	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.
•		

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 8-31-97AMBIENT ROOM TEMPERATURE °C: +21

UUT TEMP °C.	UUT CURRENT (MÅ)	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.9	-72,90	-24.65	1.75	3.5	3.8	(~2)	·
+8	44.0	-23.00	-24.75	1.75	3.5	3.8	28	
+28	44.0	-23.15	-24.40	1.75	3.5	3.8	-8	
+40	44.1	-23.30	-2505	1.75	3.5	3.8	HB:	
Noise fig	ture change_ Above data te	dB Spe o be taken with	ec is .5dB peak the Daden filte	to peak on -2 or, except on the	0 AC he -19 unit.	C - S	REJ	

NEΔT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

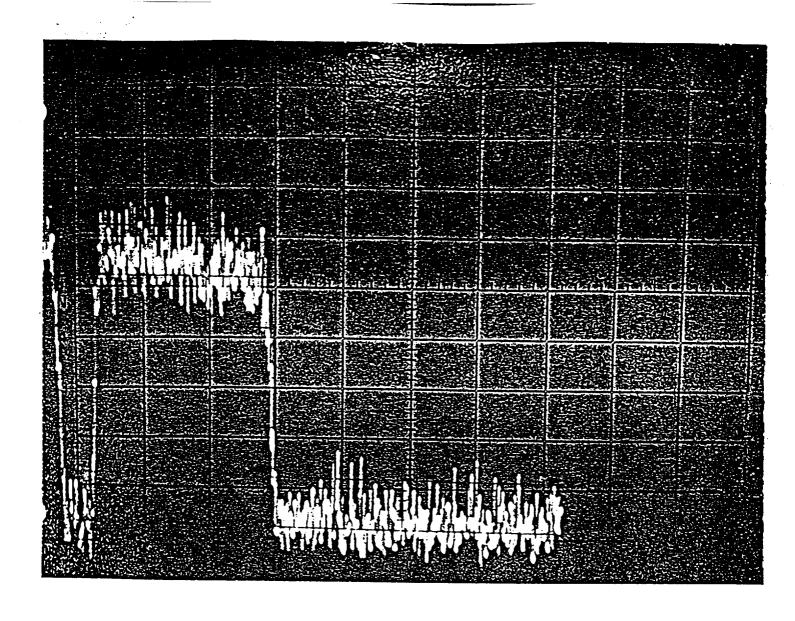
Date: 9/8/97 Ambient Room Temperature °C: 25

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0,263

Record Nps(K) 0.08 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC	REJ S.
PART NO. <u>1331562- 13</u> F	SPACEK QA	<u>DATE</u> 9- <u>10-97</u>	ACC REJ
SER NO	TEST FAILURE:		
TESTED BY:	FAILURE ANALYSIS	S NO	
END DATE: 9/8/97	•		
END TIME: 1600	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.	1



5.4.14 Noise Power Profile

Model No.: 1331562-/3F

Serial No.: 7A03

Date: 9-10-97

Tested by: Dr

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.

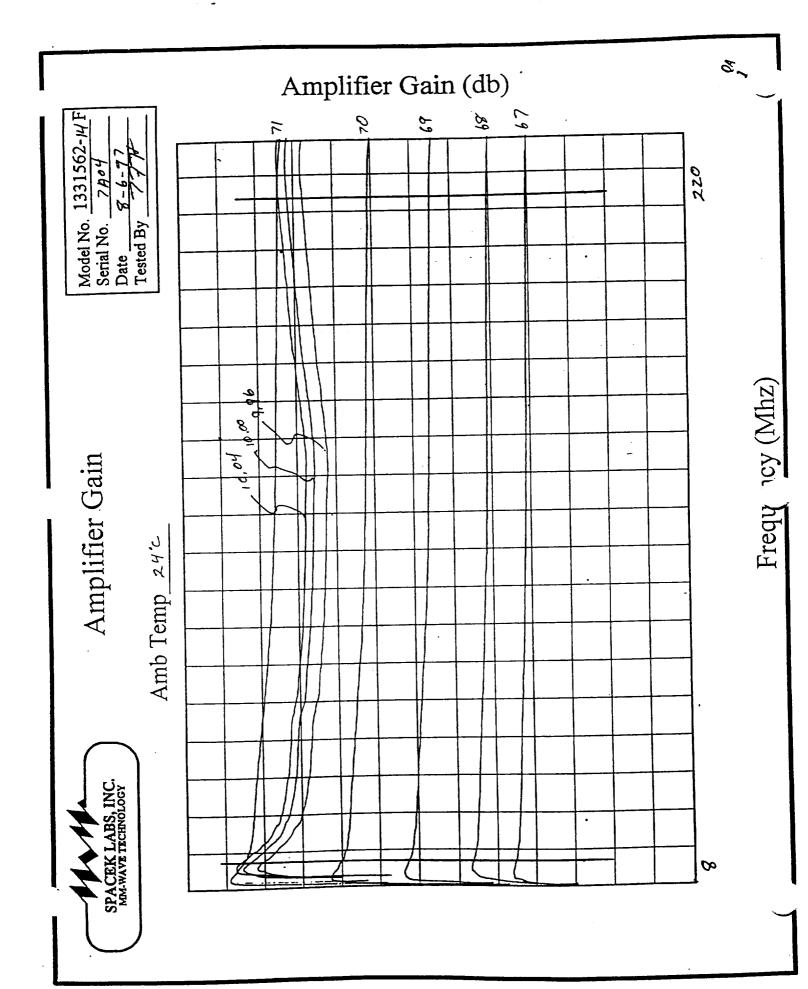
QA 1

Channel 4 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-14, S/N: 7A04)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATN	ESS TEST: ATP P	<u>ARAGRAPH</u>	<u>T 5.1.3</u>	
GAIN FLATN (dB)ppK		I FLATNESS	ACC RI	EJ
0.37	_ 0.5		40	
GAIN VERSU.	S VOLTAGE SEN	SITIVITY TI	EST: ATP PA	IRAGRAPH 5.1.4
AMPLIFIER	GAIN		SPEC.	
VOLTAGE	READING (dBm)	$\Delta G/\Delta V$	ΔG/ΔV	ACC REJ -
10.04 10.00 9.96	71.00 70.90 70.75	3.12	2.0	$-\underbrace{\begin{pmatrix} \mathbf{J} \\ \mathbf{J} \end{pmatrix}}$
$\Delta G_{\rm V} = $	0.25 dB			
				DATE ACC REJ
PART NO	1331562-14F	SPA	CEK QA	9-4-97
SER NO.	7A04	TEST	FAILURE:	
TESTED E	8Y: 27	FAILURE	E ANALYSIS	NO
END DAT	E: <u>8-7-97</u>	_		
END TIME	E: <u>1600</u>		Spacek Labs 212 E. Gutie	errez St.
			Santa Barba	ra,CA,93101



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nomi	nal Temperature	Rela	itive Gain	ΔG/ΔT	SPEC	ACC	REJ
T1	+40	GT1	70.57	But her bearing a latter last the			
				.024	0.035dB/°C	An	7
T2	+28	GT2	70.86				! }
				* 430	0.020dB/°C		20
T3	+8	Gтз	71,45	And the first of the control of the Control of the			Ur 1
		of sugarious.	The second second	• .024	0.035dB/*C	/	
Τ4	- 6	GT4	71.79	Marin Charles Charles Commencer].

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{T_i} - G_{T_{i+1}}}{T_i - T_{i+1}}$$

$$\Delta G_{T_i} = \frac{1,2,3,4}{T_i - T_{i+1}}$$

$$\Delta G_{T_i} = \frac{1,2,3,4}{T_i - T_{i+1}}$$

$$\Delta G_{T_i} = \Delta G_{V_i} + \Delta G_{T_i} + 0.4 = \frac{1}{2} \frac{87}{4} dB \text{ Spec } 1.4 dB . \qquad ACC \qquad REJ 1$$

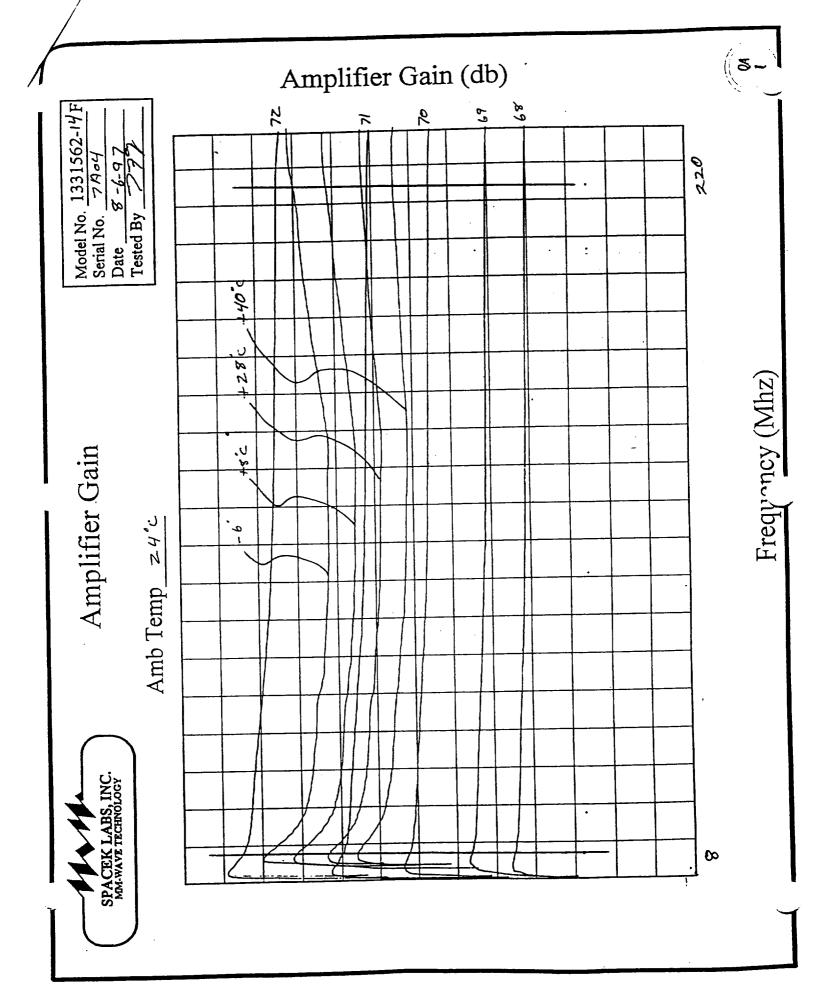
PART NO. <u>1331562-**14**</u> F SPACEK QA

SER NO. ______7A04 TEST FAILURE:

TESTED BY: FAILURE ANALYSIS NO.

END DATE: 8-7-97 Spacek Labs, Inc.

END TIME: __ 1600 212 E. Gutierrez St. Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

ח	A	S	Н	#
$\boldsymbol{\mathcal{L}}$	7	J.	L L	**

11 12 12 14 15 16 17 10 10 00		P2	OUTPUT	SPEC.
11 12 13 14 15 16 17 18 19 20	FREQ.	COMP	COMP.	COMP.
	(MHz)	(dBm)	at+10(dBm)	PT (dBm) ACC REJ
X X X X X X X X X	_ 10	-2.3	0.7	1.0
X	20	-		
XX	50			
X X X X X X X X X	100	-2.6	0.4	/_ /= -
X	150	2,6	0.1	1.0 (8-
X X X X X X	200			
X	400	-2.5	0.5	<u>/.0</u> &
X				<u></u>
_ _	500			
X	1000			-
X	1500		-	

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 8-7-97 AMBIENT ROOM TEMPERATURE °C: 2/

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- 14 F</u>	SPACEK QA	DATE ACC REJ 8-8-97 5-
SER NO	TEST FAILURE:	
TESTED BY: 77	FAILURE ANALYSIS	S NO
END DATE: 8-7-97		
END TIME: 1:30 pm	Spacek Labs, 212 E. Gutier Santa Barbara	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 9-1-97 AMBIENT ROOM TEMPERATURE °C: 421

UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC REJ
-6	43.7	-19.10	-21,15	2.05	3.0	3.8	8- \
+8	43.8	-19,30	-21.35	2.05	3.0	3.8	3-
+28	43.9	-19.60	-21.60	2.0	3.1	3.8	(8-)
+40	440	-19.7	-21.70	210	3.1	3.8	5- /
Noise figure change O, dB Spec is .5dB peak to peak on -20 ACC S- REJ NOTE: Above data to be taken with the Daden filter, except on the -19 unit.							

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

Date: 9-8-97 Ambient Room Temperature °C: 24

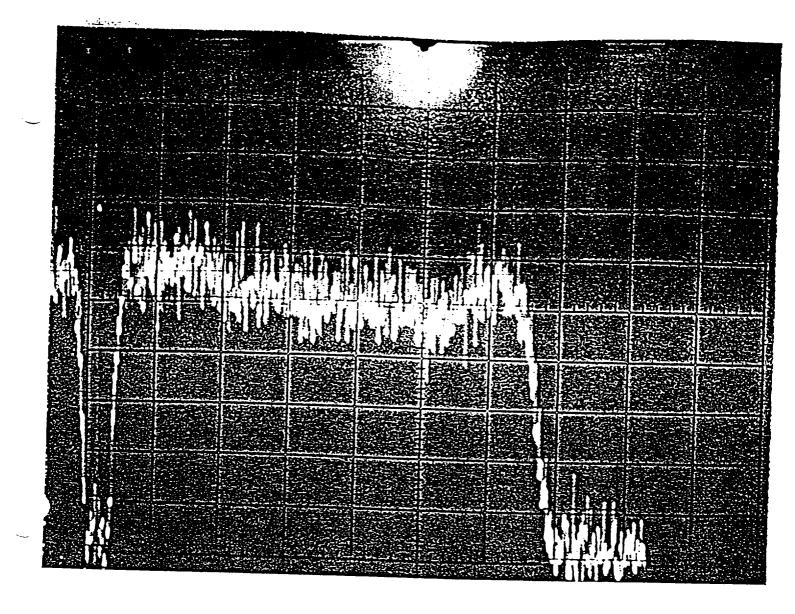
Attach computer generated NEAT spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.168

Record Nps(K) 0.08 for dash number from Aerojet specification AE-24869, Table II.

Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ
PART NO. <u>1331562-14F</u> SER NO. <u>7A04</u>	SPACEK QA TEST FAILURE:	DATE ACC REJ 9-10-97
TESTED BY:	FAILURE ANALYSIS	S NO
END DATE: 9-8-97 END TIME: 1600	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.



5.4.14 Noise Power Profile

Model No.: 1331562-14F

Serial No.: 7A04

Date: 9-10-97
Tested by: 07

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

30 mhz/Div. Scan Width:

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.



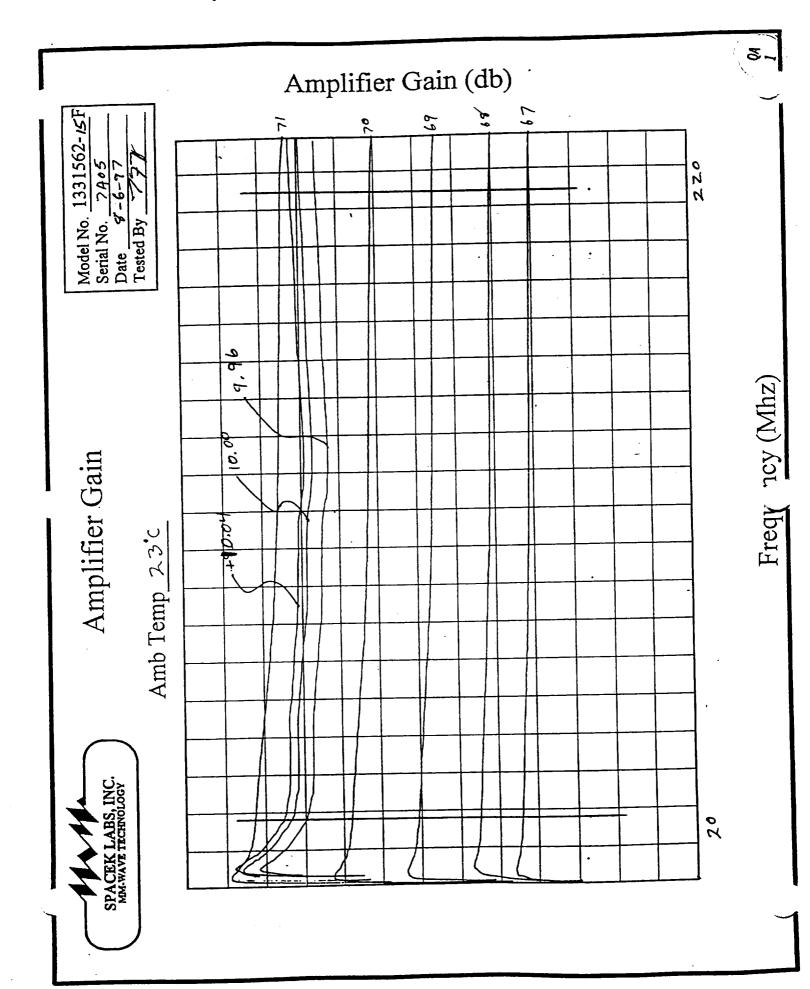
Channel 5 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-15, S/N: 7A05)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST: ATP PARAGRAPH 5.1.3

GAIN FLATM (dB)ppK		(dB)ppK	N FLATNESS	AGC I	Œ
0,16		0,5		1	
<u>GAIN VERSU</u>	IS VOL	TAGE SEN	ISITIVITY TE	ST: ATP P	ARAGRAPH 5.1.4
AMPLIFIER	GAIN			SPEC.	
VOLTAGE	READ	NG (dBm)	$\Delta G/\Delta V$	ΔG/ΔV	ACC REJ -
10.04 10.00 9.96 DGV =	70.9 70.8 70.7 0.2	8 10	<u>3.25</u>	2.0	QA 1
_					DATE ACC REJ
PART NO). <u>133156</u>	2-15F	SPAC	EK _. QA	9-4-97 QA
SER NO.		7A05	TEST 1	FAILURE:	
TESTED 1	BY:	TH	FAILURE	ANALYSIS	NO
END DAT	E: _8	-7-97			
END TIMI			2	Spacek Lab 212 E. Gutic Santa Barba	s, Inc. errez St. ara,CA,93101



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal (°C)	Temperature	Relative Gain	ΔG/ΔT	SPEC	ACC	REJ
T1	+40	GT1 70,70			, , , , , ,	
T2		GT2 70.86	-0/3	0.035dB/°C	QA	
		STANSON ASSESSMENT	.026	0.020dB/°C	-	OA
13	+ 8	Grs 71,38				i
Γ4 -	-6		-,012	0.035dB/*C	QA `	

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}}$$

$$i = 1,2,3,4$$

$$\Delta G_T = \frac{0.85}{dB}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = 1.51$ dB Spec 1.4dB

DATE ACC REJ

PART NO. <u>1331562- 15 F</u>

SPACEK QA

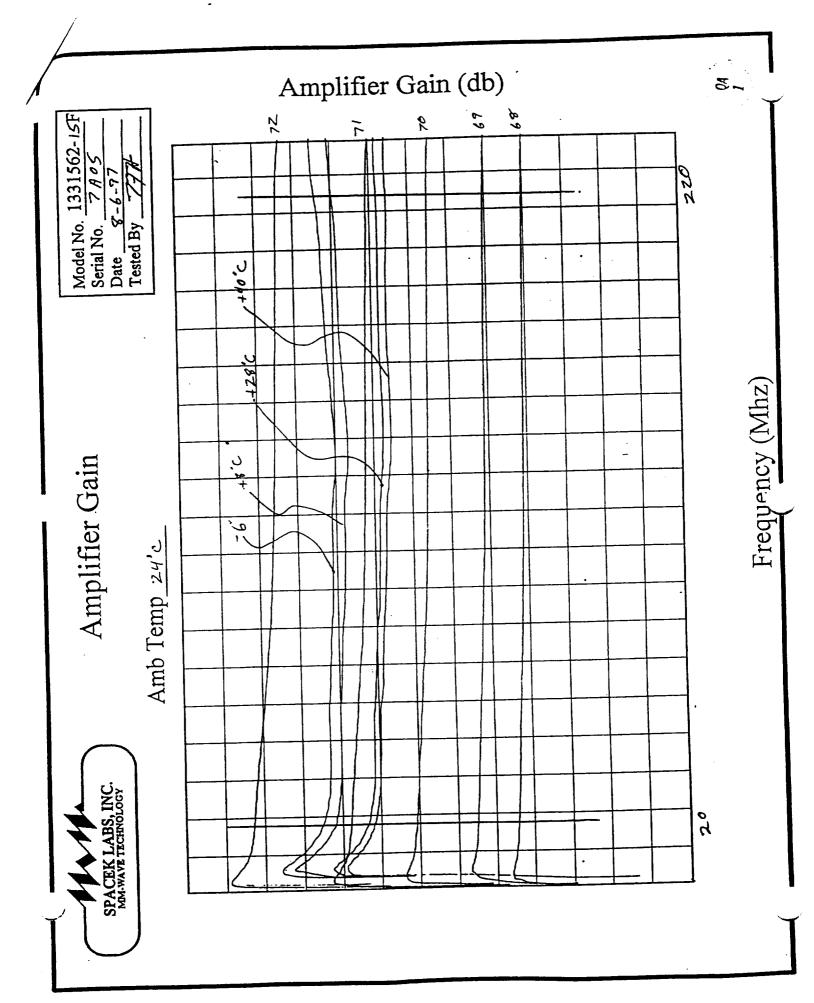
TEST FAILURE:

TESTED BY: _____ FAILURE ANALYSIS NO. ____

END DATE: 8-7-97

END TIME: |600

Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

D	A	S	Н	#
~		_		$\boldsymbol{\pi}$

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	AES REJ
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	10 20	-2.3	0,7	_1.0	&-)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	50				\preceq
X	100 150	-2.6	0.4	1.0	8-
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	200 400	-2.3	0.7	1.0	8
X X	500 1000				
X	1500				

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 8-7-97 AMBIENT ROOM TEMPERATURE °C: 21

AMPLIFIER OUTPUT POWER AMBIENT (dBm)	AMPLIFIER OUTPUT POWER (-77 K)(dBm)	Y FACTOR (dB)	AMPLIFIER NOISE FIGURE (dB)
-21.0	-24.6	3.6	i.18

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- 15 F</u>	SPACEK QA	DATE ACC REJ
SER NO	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	NO
END DATE: 8-7-97		
END TIME: 1:30 pm	Spacek Labs, 212 E. Gutieri Santa Barbara	rez St.
		

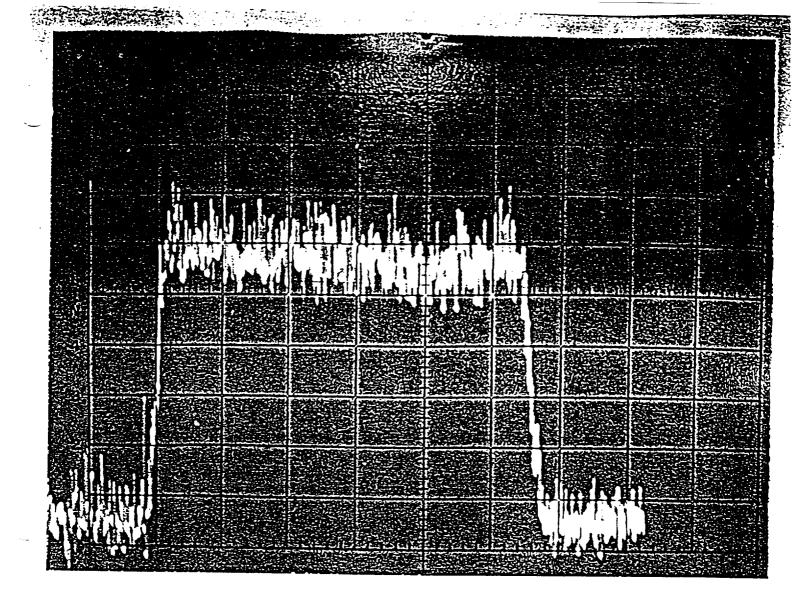
TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 8-31-97 AMBIENT ROOM TEMPERATURE °C: + 2 (
UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ	
-6_	43.5	-19.60	-21.60	2.0	3.1	3.8			
+8	43.5	-19.70	-21.65	1.95	3.2	3.8	-7-		
+28	43.7	-20.00	-21.95	1.95	3.2	3.8	7		
+40	43.8	-20,20	-22.15	1.95	3,2	3.8	04		
Noise figure change <u>0.1</u> dB Spec is .5dB peak to peak on -20 ACC REJ NOTE: Above data to be taken with the Daden filter, except on the -19 unit.									
NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9									
Date: 8-5-97 Ambient Room Temperature °C: 25									
Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.									
Record the calculated Nps(K) from spreadsheet data: 0.337									

Record Nps(K) 0.08 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ
		- 32
	an Lante o L	DATE ACC REJ
PART NO. <u>1331562-15</u> F	SPACEK QA	9-10-97
SER NO	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSI	S NO
END DATE: 8-5-97		
END TIME: 1600	Spacek Labs, 212 E. Gutie Santa Barba	rrez St.



5.4.14 Noise Power Profile

Model No.: 1331562-/5F

Serial No.: 7A05

Date: 9-10-97
Tested by: 15

Spectrum Analyzer Parameters

Vertical Scale:

2 dB/div.

Scan Width:

30 mhz/Div.

IF Band Width: 10 Khz

Scan Time:

3 sec/Div.

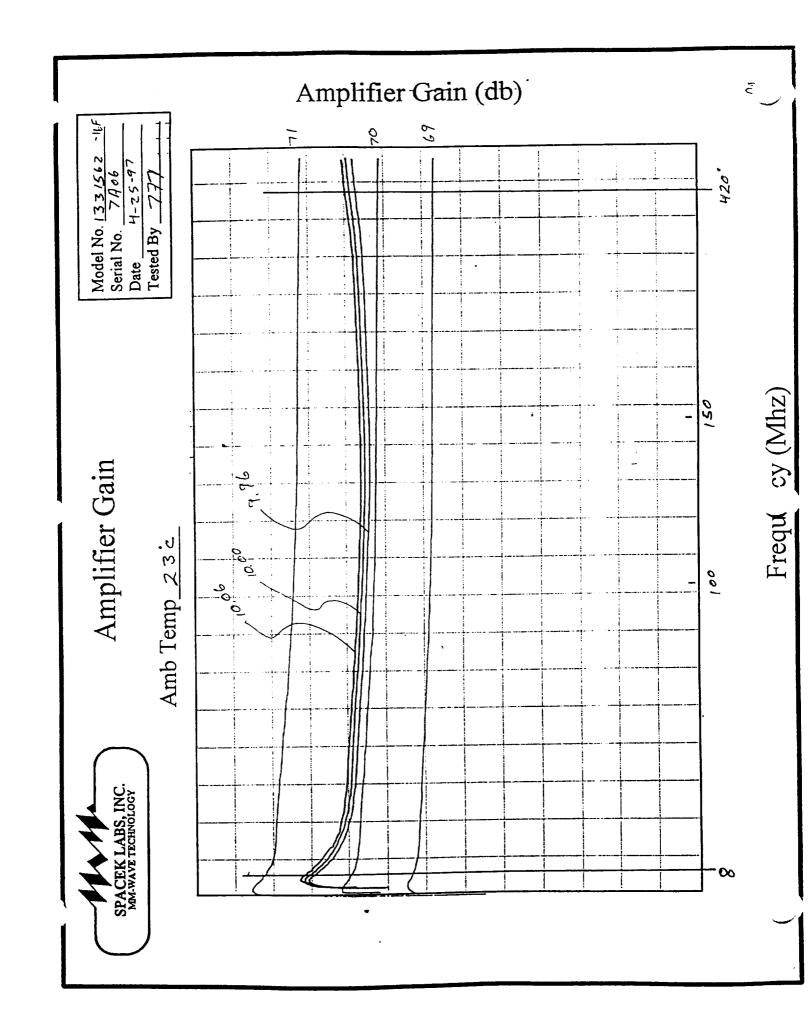
No video filter.

Channel 6 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-16, S/N: 7A06)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNE	SS TEST: ATP P.	<u>ARAGRAP</u>	H 5.1.3			
GAIN FLATNES (dB)ppK <u>の、と</u> 8	SS SPEC. GAIN (dB)ppK		ACC QA _ 1	REJ		
GAIN VERSUS	VOLTAGE SENS	SITIVITY 1	EST: ATP	<u>PARAGRAP</u>	H 5.1.	<u>4</u>
_	GAIN EADING (dBm)	ΔG/ΔV	SPEC.	ACC	REJ	-
	70.41 70.35 70.29 0.12 dB	1.5	2.0	<u> 7</u> Øë:		
				<u>DATE</u>	<u>ACC</u>	<u>REJ</u>
PART NO. <u>1</u>	331562-16F	SPA	CEK QA	4-2 <u>5-97</u>	49 1	
SER NO	7A06	TES	T FAILURE:			_
TESTED BY		FAILUR	E ANALYSI	S NO		-
END DATE:	4-25-97				_	
END TIME:	4:00PM	·	Spacek La 212 E. Gut Santa Barl		.01	



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	Gt1 69.95				
T2 + 5.0		0,025	10.035dB/°C	O _A	1
12 + 28	GT2 +0,25			1	
r3 + 8	GT3 70.85	<i>- 0,030</i> .	10.020dB/°C	!	QA 1
		0-024	0.035dB/°C	ΩA	
4 -6	GT4 71.18			1	

* Perform the following calculations and record on the TDS

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = \frac{1.75}{100} dB$ Spec 1.4dB ACC____ REJ

DATE ACC REJ

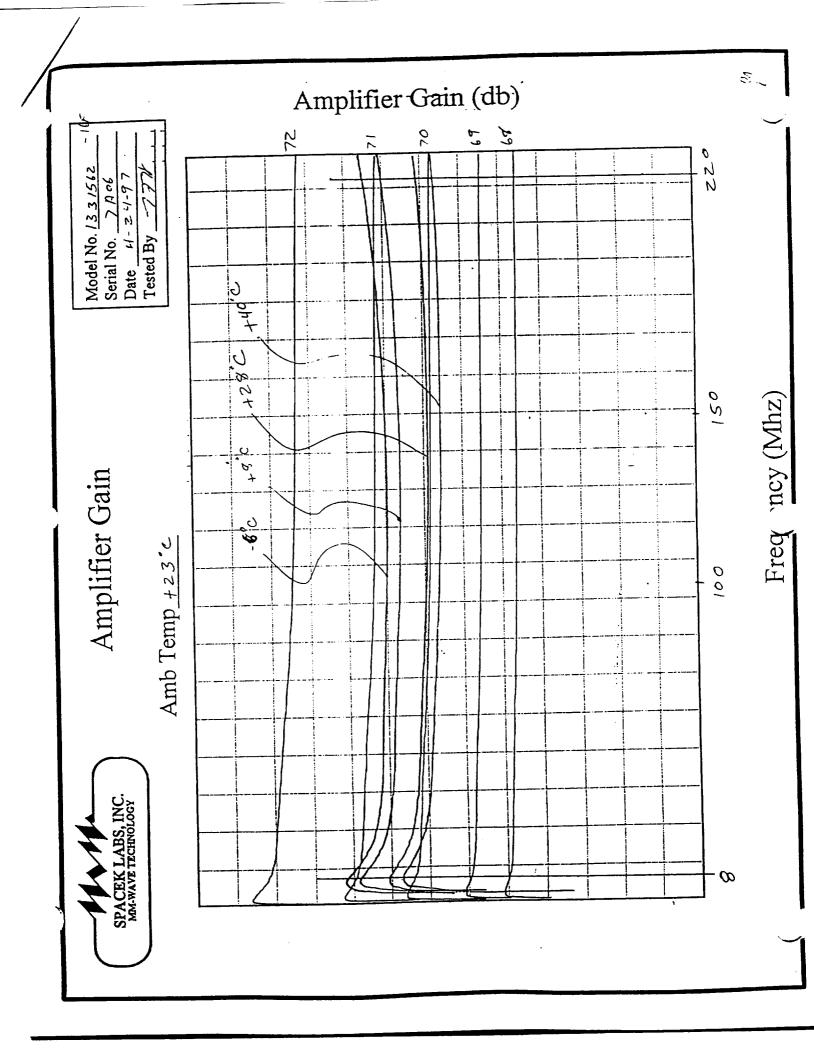
PART NO. <u>1331562-16</u>F 4-24-97 QA SPACEK QA

TEST FAILURE:

TESTED BY: FAILURE ANALYSIS NO.

END DATE: <u>4-24-97</u>

Spacek Labs, Inc. END TIME: 4:00 pm 212 E. Gutierrez St. Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

$\overline{}$		ATT	,,
	Δ	\sim	77

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	400	777
X X X X X X X X X X	10	0.6		ACC S =	KEJ
хх	50	1776	1.0		
X X X X X X X X X	100	0,5	1,0	ङा	
X	150	<u> </u>	<u> </u>		
X X X X X X	200	0.7	1.0	<u> </u>	—
X	400	<u> </u>		<u></u>	
X	500				
X	1000		<u> </u>		
X	1500				

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4/20/97AMBIENT ROOM TEMPERATURE °C: +23

AMPLIFIER OUTPUT POWER AMBIENT (dBm)	AMPLIFIER OUTPUT POWER (-77 K)(dBm)	Y FACTOR (dB)	AMPLIFIER NOISE FIGURE (dB)
-20.6	-24.2	3.6	1.15

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- 16 F</u>	SPACEK QA	DATE ACC REJ 4-20-97 5~
SER NO	TEST FAILURE:	
TESTED BY: 77	FAILURE ANALYSIS	3 NO
END DATE: 4-20-97		
END TIME: 4:00 pm	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 17-247 AMBIENT ROOM TEMPERATURE °C	:+22
--	------

UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.4	-19.60	-21.65	2.05	3.0	3.8	a,	
+8	43.5	-19.70	-21.70	2.0	311	3.8	Oh.	
+28	43.6	-20,00	-22.00	7.0	_3,/_	3.8	a,	
<u> 440</u>	43.6	-20,40	-22.40	1.9	3.3	3.8	OF	
Noise figure change 0, 3 dB Spec is .5dB peak to peak on -20 ACC REJ NOTE: Above data to be taken with the Daden filter, except on the -19 unit.								

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

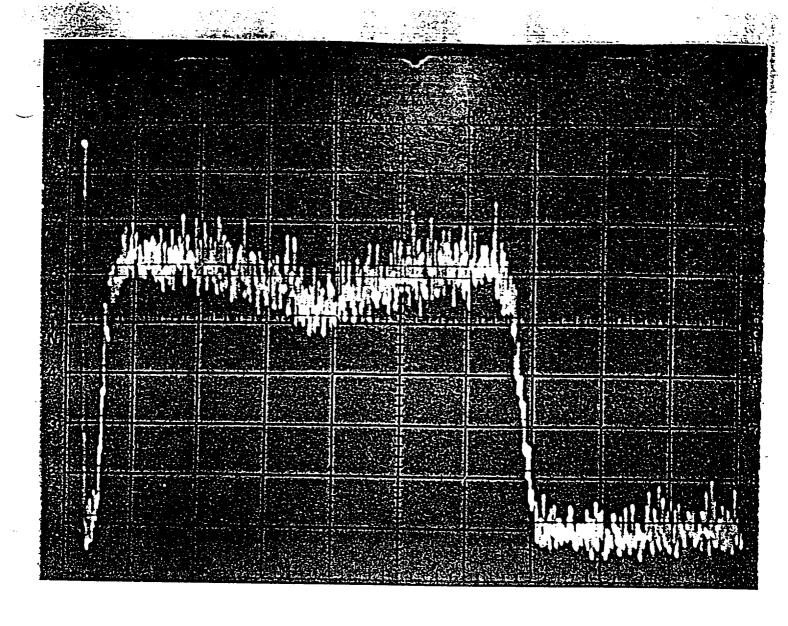
Date: 7-1-97 Ambient Room Temperature °C: +25

Attach computer generated $NE \triangle T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.203

Record Nps(K) 0.07 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

	ACC REJ.
PART NO. <u>1331562-16F</u> SER NO. 7 AO6	SPACEK QA 7-2-87
TESTED BY: $\frac{7406}{}$	FAILURE ANALYSIS NO
END DATE: 7-2-97 END TIME: 1600	Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara,CA,93101



5.4.14 Noise Power Profile

Model No.: 1331562-16F

Serial No.: 7,406

Date: 7-3-97

Tested by:

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width: 10 Khz Scan Time: 3 sec/

Scan Time:

3 sec/Div.

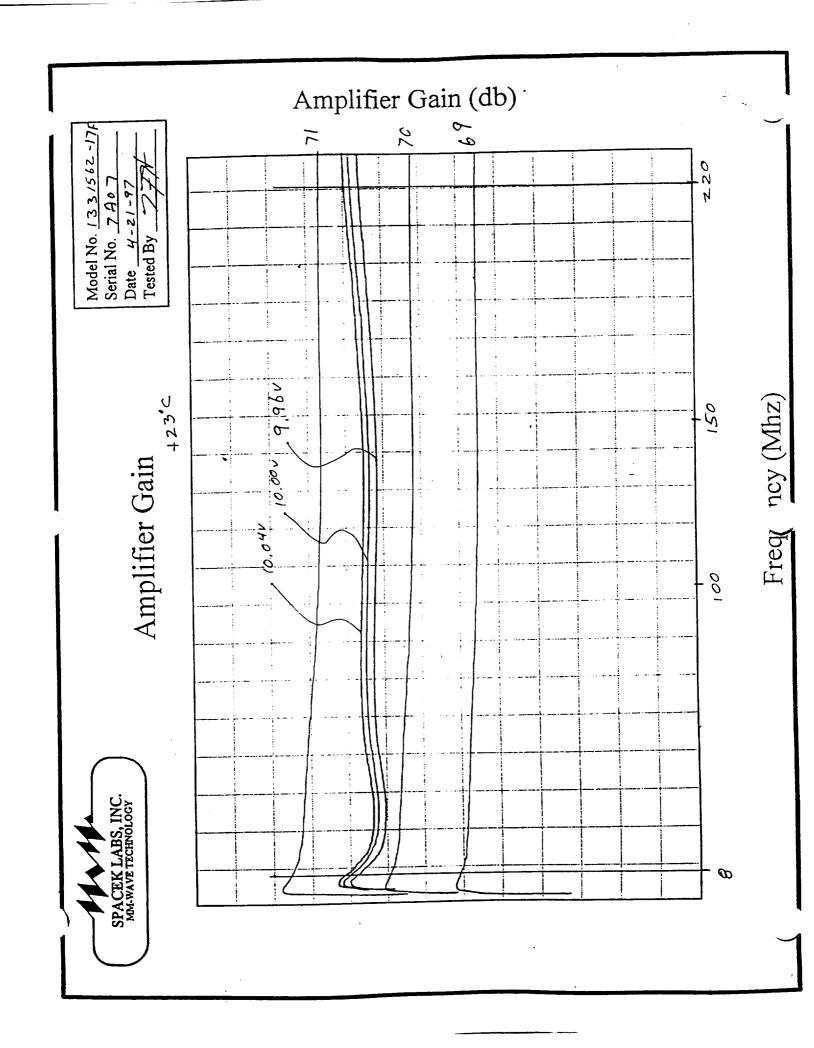
No video filter.

Channel 7 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-17, S/N: 7A07)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLAT	NESS TEST: ATP P	ARAGRAP	PH 5.1.3	•		
GAIN FLATI (dB)ppK	NESS SPEC. GAIN (dB)ppK	FLATNES		REJ		
0.42	0.5		40			
			·			
GAIN VERSU	US VOLTAGE SENS	SITIVITY 1	TEST: ATP I	PARAGRAP	PH 5.1.4	
AMPLIFIER VOLTAGE	GAIN READING (dBm)	ΔG/ΔV	SPEC.	4.00	npr	
		20/21	70/74	ACC Qa	KEJ	
10.00 9.96 AGv =	70.71 70.65 70.55	2.0	2.0	<u>i</u>		
•				DATE	ACC F	ŒJ
PART NO). <u>1331562-<i>17F</i></u>	SPA	ACEK QA	4-21-97	QA _1 _	
SER NO.		TES	T FAILURE:			
TESTED	BY:	FAILUR	E ANALYSI	S NO		
END DAT	re: <u>4-21-97</u>					
END TIM	E: 4:00 7m		Spacek Lal 212 E. Gut Santa Bark		-	



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

REJ	ACC	SPEC	ΔG/ΔT	Relative Gain	minal Temperature
			The second of the second second second second	GT1 70,45	+40
	QA	0.035dB/°C	0,021	GT2 70.70	+28
AQ		0.020dB/°C	().030	GT3 71.30	+8
1	0.0	10.035dB/°C 1	~ D*()/X		- 6
	Qr 1			GT4 71.55	-6

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}}$$

$$i = 1,2,3,4$$

$$\Delta G_T = \frac{1,10}{dB}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = 1.66 \text{ dB Spec 1.4dB} \qquad ACC \underline{\qquad} REJ \underline{\qquad} 1$

DATE ACC REJ

PART NO. 1331562-17F SPACEK QA 4-24-97 1

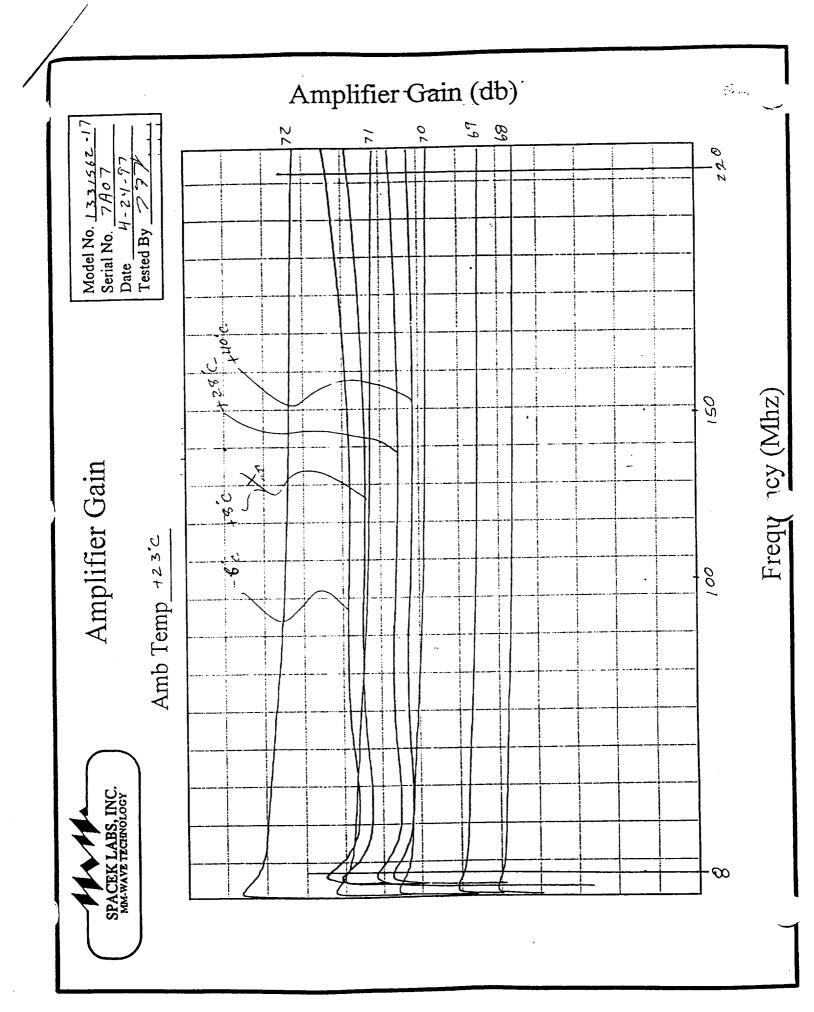
SER NO. 7A07 TEST FAILURE:

TESTED BY: 77 FAILURE ANALYSIS NO. _____

END DATE: 4-24-97

END TIME: 4:00Pm Spacek Labs, Inc.
212 E. Gutierrez St.

Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

\mathbf{r}		SH	"
	Δ	\sim	#

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	4.00	DEV
X X X X X X X X X				<u>ACC</u>	<u>KEJ</u>
	10	0.70	1.0	\$~	
XX	50	-	-		
X X X X X X X X X	100	. 0.55	1.0	V.	
X	150	<u> </u>	110		
X X X X X X	200	0.60	1.0	1	—
X	400	_0.00	<u></u>	3	
X	500				
X	1000				
X	1500				
					

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4-20-97 AMBIENT ROOM TEMPERATURE °C: + 23

AMPLIFIER **AMPLIFIER** OUTPUT **OUTPUT AMPLIFIER** POWER POWER Y FACTOR NOISE AMBIENT (dBm) (-77 K)(dBm) (dB) FIGURE (dB) -20,1 - 23,7 _3,6

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562-17</u> F	SPACEK QA	DATE ACC REJ
SER NO	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSI	S NO
END DATE: 4-24-97		
END TIME: <u>4:00 Pm</u>	Spacek Labs 212 E. Gutie Santa Barba	rrez St.
		

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 7-3-97AMBIENT ROOM TEMPERATURE °C: +22

UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC OA	REJ
6	42.8	-19.50	-21.80	2.30	2.6	3.8	NA TOP	
+8	41.9	-19.60	-21.85	2,25	2.7	3.8	1 Ag	
+28	43.0	-19.80	-22.00	2.20	2.8	3.8	$\times \frac{1}{0A}$	
+40	43.1	-20,40	-22.60	2.20	2.8	3.8	1	
Noise fi	gure change	C. 2 dB Si	pec is .5dB peal	k to peak on	-20 A	CC OR	REJ	

NOTE: Above data to be taken with the Daden filter, except on the -19 unit.

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

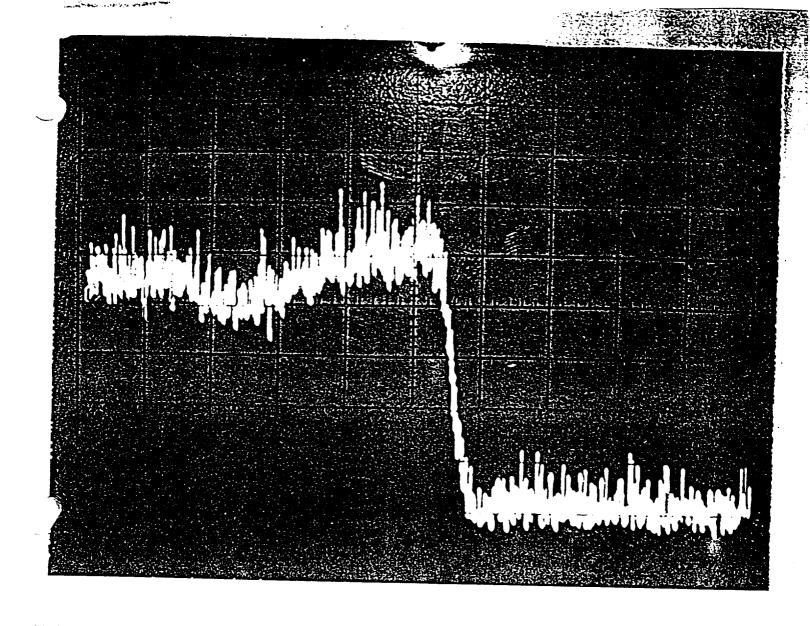
Date: 7-1-97 Ambient Room Temperature °C: +25

Attach computer generated $NE \triangle T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.167

Record Nps(K) 0.08 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

	ACC REJ
PART NO. <u>1331562- 17 F</u>	SPACEK QA 7-3-97
SER NO. 7A07	TEST FAILURE:
TESTED BY:	FAILURE ANALYSIS NO
END DATE:	Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara, CA, 93101



5.4.14 Noise Power Profile

Model No.: 1331562-17/=

Serial No.: 7A07

Date: 7-3-97Tested by: 4/4

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.

Channel 8 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-18, S/N: 7A08)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST:	ATP PARAGRAPH 5.1.3
---------------------	---------------------

GAIN FLATNESS

SPEC. GAIN FLATNESS

(dB)ppK

(dB)ppK

0.26

GAIN VERSUS VOLTAGE SENSITIVITY TEST: ATP PARAGRAPH 5.1.4

AMPLIFIER VOLTAGE

GAIN

SPEC.

READING (dBm)

ΔG/ΔV

 $\Delta G/\Delta V$

ACC RE

16.04

3.62

2.0

10.00 70.88 70.69

0.29

DATE ACC REJ

PART NO. <u>1331562-18 F</u>

SPACEK QA



SER NO. 7A08

TEST FAILURE:

TESTED BY:

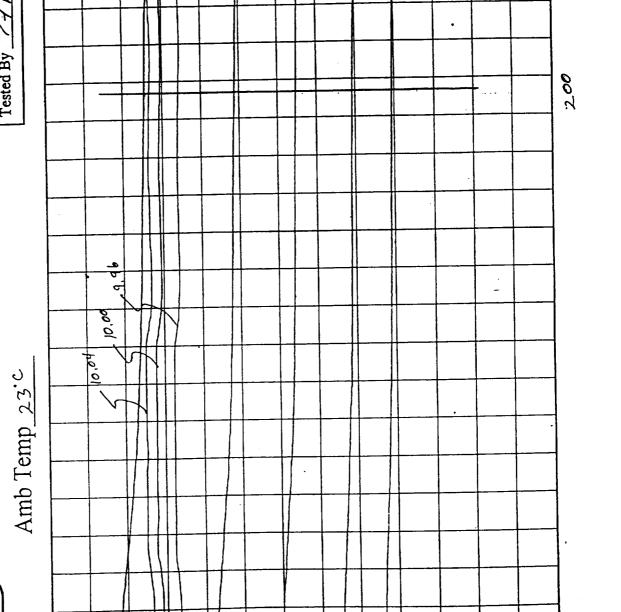
FAILURE ANALYSIS NO. _

END DATE: 8-7-97

END TIME: 600

Spacek Labs, Inc. 212 E. Gutierrez St.

Santa Barbara, CA, 93101



67

Amplifier Gain (db)

1331562-18F

Model No.

Serial No.

Date

Tested By

Amplifier Gain

Freq 1cy (Mhz)

TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	Δ G /ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 70.65				
	NO. NO. NO. AND ADDRESS OF THE PROPERTY OF THE PARTY OF T	.017	0.035dB/°C /	OA)	
T2 + 28	GT2 70,85	The state of the s		. .	
	station in the main and an anti-	• ,022	0.020dB/°C		'An
T3 + 8	1913 ナリスク	etalia terlikkaitelan oli oli lihi EBBA STALLERGIA ALEKSIKA			3
		.015	0.035dB/°C	AO	7
T4 -6	GT4 71,49			1	

Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \begin{array}{c} G_{Ti} - G_{Ti+1} \\ \\ ------ \\ T_i - T_{i+1} \end{array} \qquad \qquad i=1,2,3,4 \qquad \qquad \Delta G_T = \begin{array}{c} \underline{0.84} \\ --dB \end{array}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = \frac{1.53}{1.40} dB$ Spec 1.4dB

ACC

DATE ACC

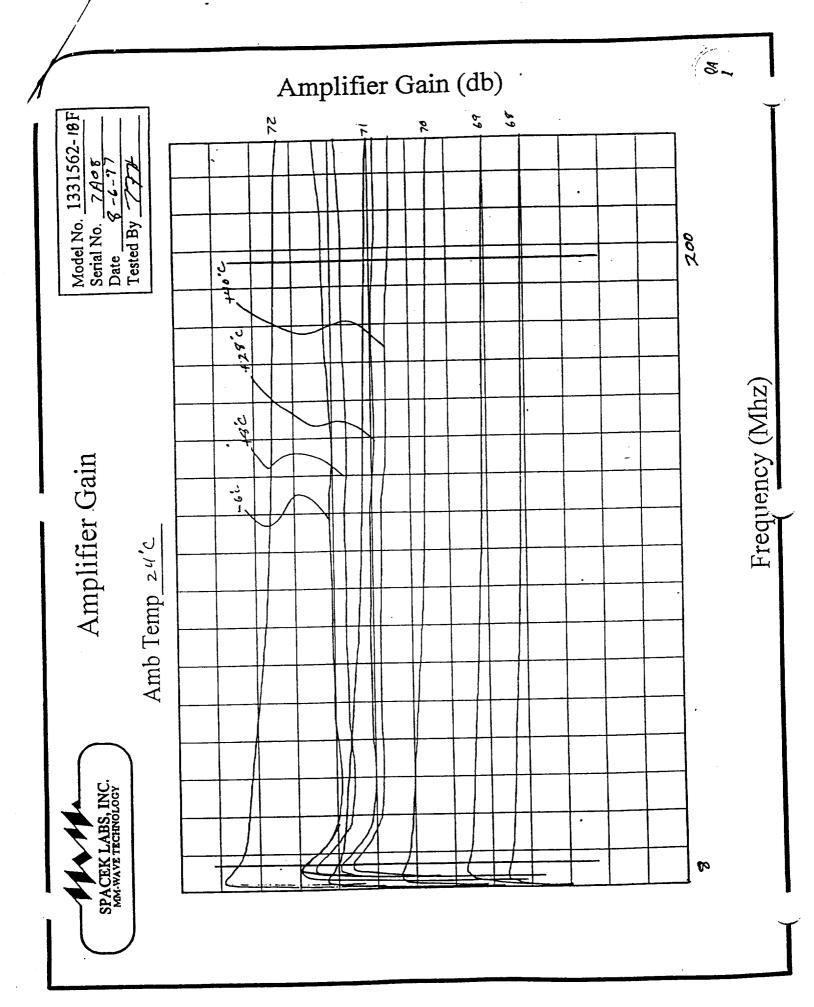
PART NO.	1331562-18F	SPACEK QA	
			 _

SER NO. 7A08 TEST FAILURE:

TESTED BY: FAILURE ANALYSIS NO.

END DATE: 8-7-97 Spacek Labs, Inc.

END TIME: 1600 212 E. Gutierrez St. Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

n	A	CLI	ш
	А	21	#

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP.	<u>A€E`RE</u> J
X X X X X X X X X	_ 10	- 2.3	0.7	1.C	<u>8-</u> _
X	20				
X X	50				
X X X X X X X X	_ 100	-2.6	6.4	1.0	8-
X	150				<u> </u>
X X X X X X	_ 200	- 2.3	0.7	1.0	8-
X	400				
X	500				
X	1000				
X	1500				

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 8-7-97 AMBIENT ROOM TEMPERATURE °C: 21

AMPLIFIER **AMPLIFIER** OUTPUT OUTPUT **AMPLIFIER** POWER POWER Y FACTOR NOISE AMBIENT (dBm) (-77 K)(dBm)(dB) FIGURE (dB) -23.8 -20,2 3.6 1.18

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- 18</u> F	SPACEK QA	DATE ACC REJ 8-8-97 S.
SER NO	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	S NO
END DATE: 8-7-97		
END TIME: 1:30 pm	Spacek Labs, 212 E. Gutier Santa Barbara	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 8-31-97	AMBIENT ROOM TEMPERATURE °C:_	+21
---------------	-------------------------------	-----

UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.5	-18.90	-21,00	2.10	2.90	3.8	<u>8</u> -	
+8	43.5	-18,90	-20,95	2.05	3.0	3.8	8 –	-
+28	43.7	-19.20	-21,25	2.05	3.0	3.8	%-	
+40	43.8	-19.40	- 21.40	2.00	3.1	3.8	A O	
Noise fi	gure change_ Above data	O. L dB Sp to be taken with	pec is .5dB peak h the Daden fili	to peak on -2 ter, except on	20 A the -19 unit.	cc <u></u>	REJ_	

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

Date: 9-10-97 Ambient Room Temperature °C: 25

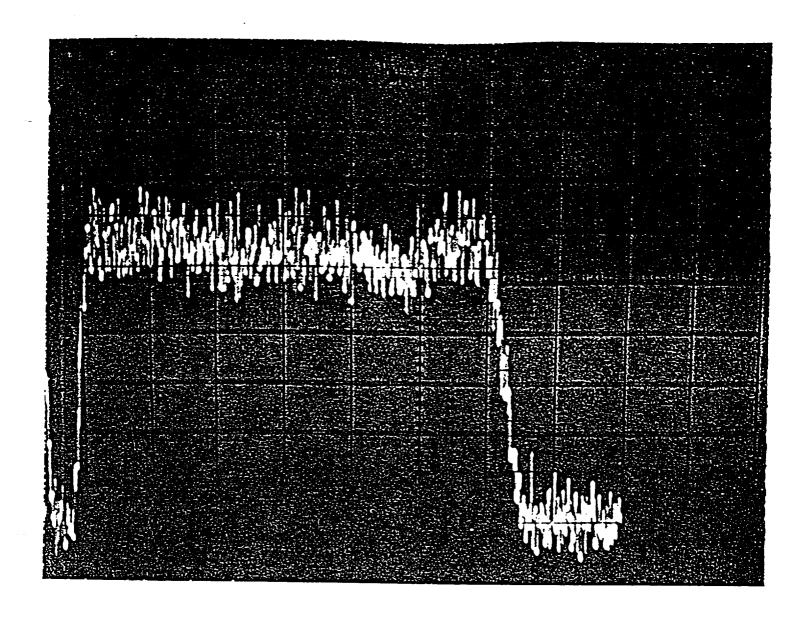
Attach computer generated $NE \triangle T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 6.184

Record Nps(K) O.O. for dash number from Aerojet specification AE-24869, Table II.

Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ
PART NO. <u>1331562-18</u> F	SPACEK QA	9-10-97 <u>S</u>
SER NO	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSI	S NO
END DATE: <u>9-10-97</u> END TIME: <u>1600</u>	Spacek Labs 212 E. Gutie Santa Barba	rrez St.
•		



5.4.14 Noise Power Profile

Model No.: 1331562-/8F

Serial No.: 7A08

Date: 9-10-97 Tested by:

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 30 mhz/Div. IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.

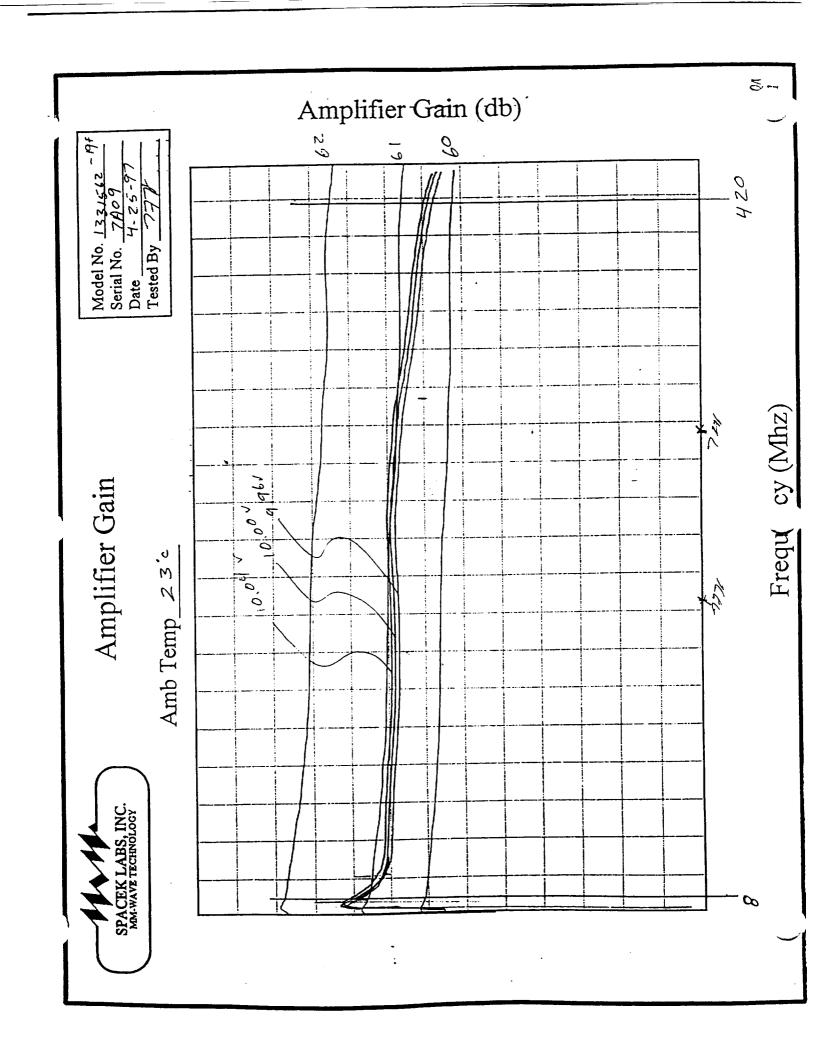


Channels 9-14 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-19, S/N: 7A09)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLAT	NESS TEST: ATP P	ARAGRAP	H 5.1.3	•		
GAIN FLATI (dB)ppK		_	S ACC .1	REJ		
0.45	0,5	· · · · · · · · · · · · · · · · · · ·	QA _1_			
GAIN VERSI	US VOLTAGE SENS	SITIVITY 1	EST: ATP I	<u>PARAGRAF</u>	PH 5.1.4	<u>1</u>
AMPLIFIER VOLTAGE	GAIN READING (dBm)	Δ G /Δ V	SPEC.	ACC	REJ	
10.04 10.00 9.96 AGV =	61.0 60.95 60.85 .15 dB	1,9	2.0	QA _1		
				DATE	ACC 1	REJ
PART NO	D. <u>1331562- 19 F</u>	SPA	.CEK QA	4-25-97	QA 1	
SER NO.	7A09		FAILURE:			
TESTED	BY: 27	FAILUR	E ANALYSI	S NO		•
END DAT	TE: <u>4-25-97</u>					
END TIM	E: 1610		Spacek Lab 212 E. Gut Santa Barb	ierrez St.		



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	ΔG/ΔΤ	SPEC	ACC	REJ
T1 +40	GT1 59.65				
T2 + 28	GT2 60.7		0.035dB/°C		QA 1
T3 + 9	GT2 (10		0.020dB/°C		QA
	013 67.75	,025	0.035dB/°C		1
14 - 6	GT4 61,5			QA 1	

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_{i} - T_{i+1}}$$

$$i = 1,2,3,4$$

$$\Delta G_{T} = \frac{1.85}{dB}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = 2.4 \text{ dB Spec 1.4dB} \qquad ACC \qquad REJ \qquad 1$

DATE ACC REJ QA

PART NO. 1331562-19F

SPACEK QA

5-<u>5-97</u> ____1

TEST FAILURE:

TESTED BY:

FAILURE ANALYSIS NO.

END DATE: 4-24-97

4-77

END TIME: 1600

Spacek Labs, Inc. 212 E. Gutierrez St.

Santa Barbara, CA, 93101

TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DASH	#

11 12 13 14 15 16 17 18 19 20	FREQ.	OUTPUT COMP at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC DEI
$X \ X \ X \ X \ X \ X \ X \ X \ X \ X \$	10	0: 7	1,0	ACC REJ
XX	50	<u> </u>		
X X X X X X X X X	100			
X	150			
X X X X X X	200	08	1.0	0A
X	400	1.3	1.0	₹ -
X	500			
X	1000			
X	1500			

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 4-10-97 AMBIENT ROOM TEMPERATURE °C: +23°C

AMPLIFIER OUTPUT POWER AMBIENT (dBm)	AMPLIFIER OUTPUT POWER (-77 K)(dBm)	Y FACTOR (dB)	AMPLIFIER NOISE FIGURE (dB)
-25.0	-28.3	3.3	1.43

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562- 19 F</u>	SPACEK QA	DATE ACC REJ 5-5-97
SER NO. 7A09	TEST FAILURE:	·
TESTED BY:	FAILURE ANALYSIS	S NO
END DATE: 4-20-97		
END TIME: 1600	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.
		

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 7-7-17AMBIENT ROOM TEMPERATURE °C: +22

UUT TEMP °C.	บบา CURRENT พ.ศ.	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB) ACC	REJ
-6	40.6	-24.10	-26.15	2.05	3.0	3.5	
18	40.7	-24,30	- 26,30	2.0	3.1	3.5 QA	
+28	40,9	-24,80	-26.80	2.0	3.1	3.5 I	
+40	41.0	-25,40	-27.30	1.9	3.3	3.5	
			pec is .5dB peak	_		CC REJ	

NOTE: Above data to be taken with the Daden filter, except on the -19 unit.

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

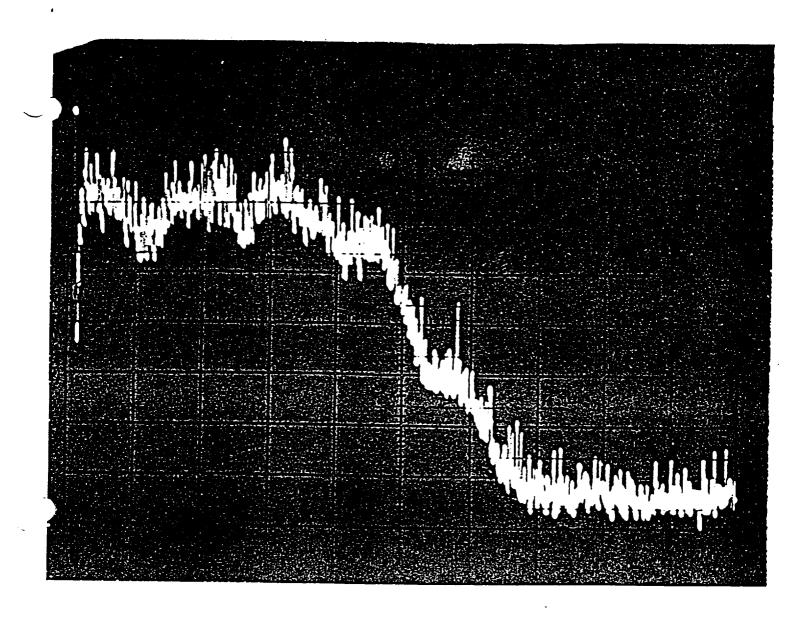
Date: 7-1-97 Ambient Room Temperature °C: +25

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.104

Record Nps(K) 0.07 for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

		ACC REJ
PART NO. <u>1331562-19</u> F	SPACEK QA	DATE ACC REJ 7-3-97
SER NO	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	3 NO
END DATE: <u>7-3-97</u>	<u> </u>	
END TIME: /600	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.



5.4.14 Noise Power Profile

Model No.: 1331562-/9F

Serial No.: 7A09

Date: 7-3-97
Tested by: 21

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: /00 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

No video filter.

Channel 9 Amplifier

IF Amplifier (P/N:1331579-8, S/N: 107)

APPENDIX C ATP1772 DATA SHEET MODEL NUMBER VD722301 AEROJET P/N 1331579-8

s/N_107

PARA	TEST	SPECIFICATION	43000		<u> </u>	
			+18°C	-4°C	+40°C	DATE
6.1.1	Examination of		Accept X	į		
	Product			-	1	1
		1	Reject	-	ł	2-10
.2.2]		
	Limiting	200 mA maximum				
	. ~	Reg. VOLTAGE				1
		Make 2 7 70 11 12 12 12 12 12 12 12 12 12 12 12 12	l	1		1
	1	max. current draw =	.,,,			}
		cullent draw =		1	1	1
. 4	Electrical				1	1 111/1
	Test			İ	1	MA
			ĺ	1	j	1
.4.1	* Polarity	j.			1.	1
	Reversal	No Damage	Current			1
	Protection	- Junaye	N/A mA	1		1
			Accept NA			j
			Reject	ļ		1
ı	Short Open	No Damage		1		_ V/A _
ĺ	Protection	Danage	Accept_X	1	1	1
- 1			Reject	ĺ		2-10-0
ľ	Output	Output shall be				2-10-9
i	Coupling	AC coupled	Accept_X			[
1		we combied	Reject			1 100
4.2	Gain vs. Freq.	14 5dp v:		1	İ	2-10-5
- 1	5 MHz to	14.5dB Min., 15.5dB Max4°C to +40°C	Max [5,30dB	Max 15,24 dB	May 45 25 am	1
- 1	200 MHz	744 - FO +40°C	Min 15.12 dB	Min 15.05 dB	Max 15,35 dB	i
j		Attach x-y plot	Accept X	Accept_	Min 15.17 dB	
l	j		Reject	Reject	Accept_x	
i	Gain Flatness	E an v			Reject	2-10-9
- 1	j	.5 dB Maximum	Accept X	Accept_X	1	ŀ
			Reject	Reject	Accept X	ł
- 1		Worse Case	0.18 dB	0.19 dB	Reject	٠
- 1	Gain Temp.	4 22 45 4		- A-11 MB	0.18 dB	2705
	Sensitivity	+.22 dB from -4°C to	Accept X	Accept_y		
	- !	+40°C	Reject	Reject	Accept_X	
1		Worse Case			Reject	
	1			_0.10 dB	0,07 dB	2.10.9
4.3	Gain-Voltage	- Family				
] :	Sensitivity	≤.5dB/v Worse Case	0.01 dB	0,02 dB	802	
		+ .2dB for 7.6v	34.9 mA	72.1 as	_002 dB	
:	Input Currents	7.6 to 8.4 Vdc 8.0v	35,7 mA	33.1 mA	38.8 mA	
1		40ma MAX. 8.4v	36.2 mA	33.6 mA	_38.1 mA	
1			Accept X	34.1 mA	37.5 ma	
	!	Attach X-Y Plot	Reject	Accept X	Accept	
				Reject	Reject	2-10-5
		ON PROTOFLIGHT UNIT ONLY				

Pamplica, Inc. Newbury Park. CA 91320					
DRAWN	Δ	FSCM NO.		ATP1772	REV.
ISSUED	SCAL	<u> </u>	25	SHEET 24 CO	<u> </u>
	<u> </u>			SHEET 34 OF 38	

APPENDIX C ATP1772 DATA SHEET MODEL NUMBER VD722301 AEROJET P/N 1331579-8

s/N<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept_X Reject			
		5 MHz 102.5 MHz 200 MHz	0.35 dB 0.35 dB 0.25 dB	0,20 dB 0,20 dB 0,20 dB	0.20 dB 0.20 dB 0.25 dB	2-10-98
4.4.8	Stability	Stable with the input terminated into a 2.5:1 mismatch and the output at all impedance's.	Accept X Reject			2-1097
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 45 mA	Accept_X Reject			
		Maximum Current	96 2915 ma 3	7. 5		210.97

NOTE: Review all recorded data and signify acceptance below.

FO=W 150

Technician Stoffman (Etl)	Date: 2-10-97
Quality Assurance the fune	Date: 2-18-97
CSI: Mlu (1276)	Date: 2-19-97
GSI: Mariorie Thomas	7-10-67

Newbury Park. CA 91320

DRAWN

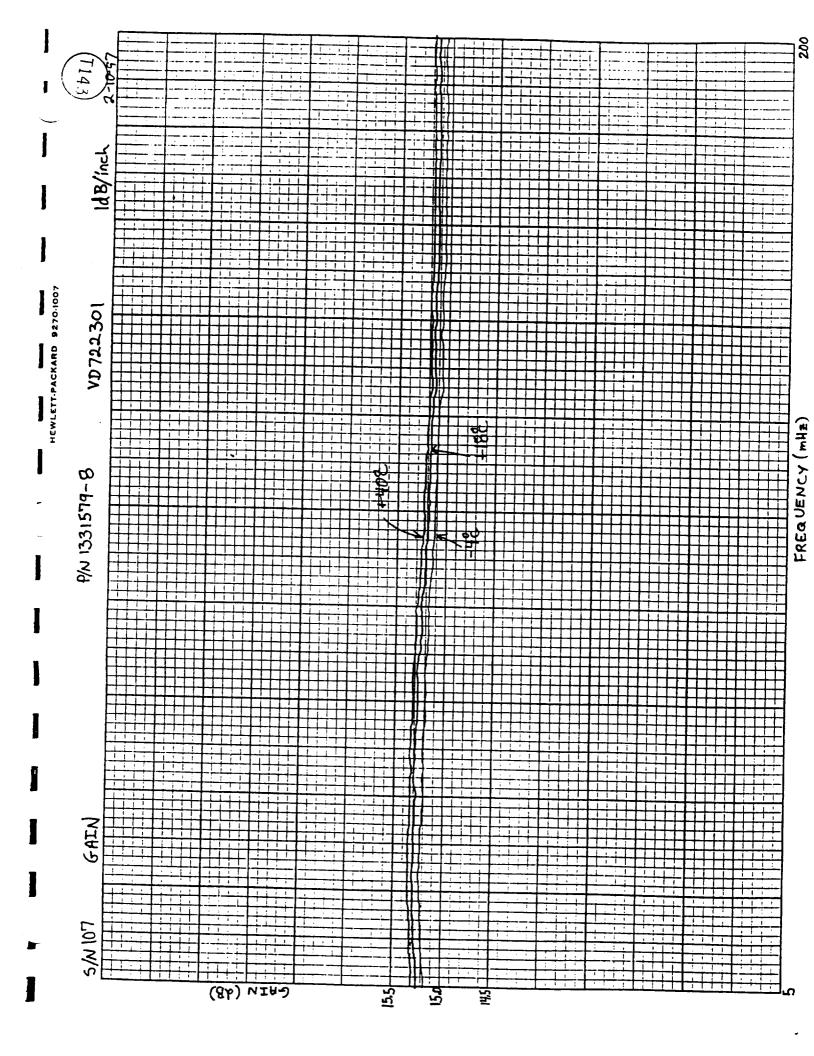
SIZE FSCM NO.

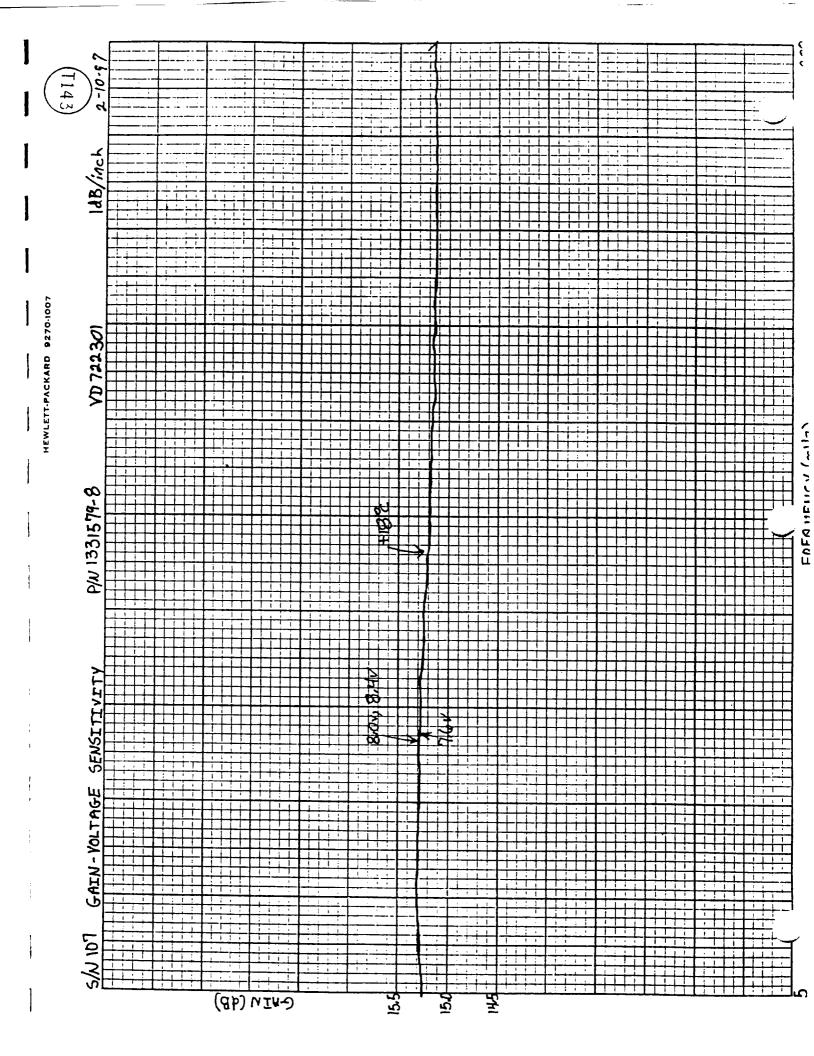
ATP1772

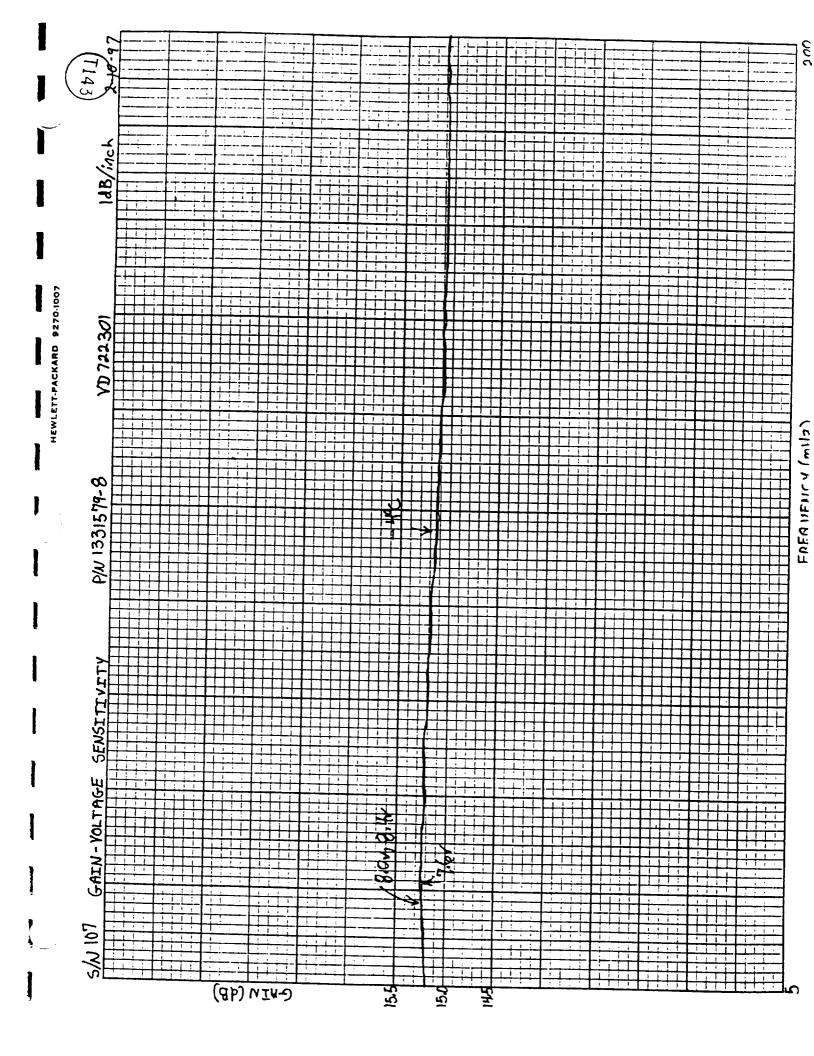
SSUED

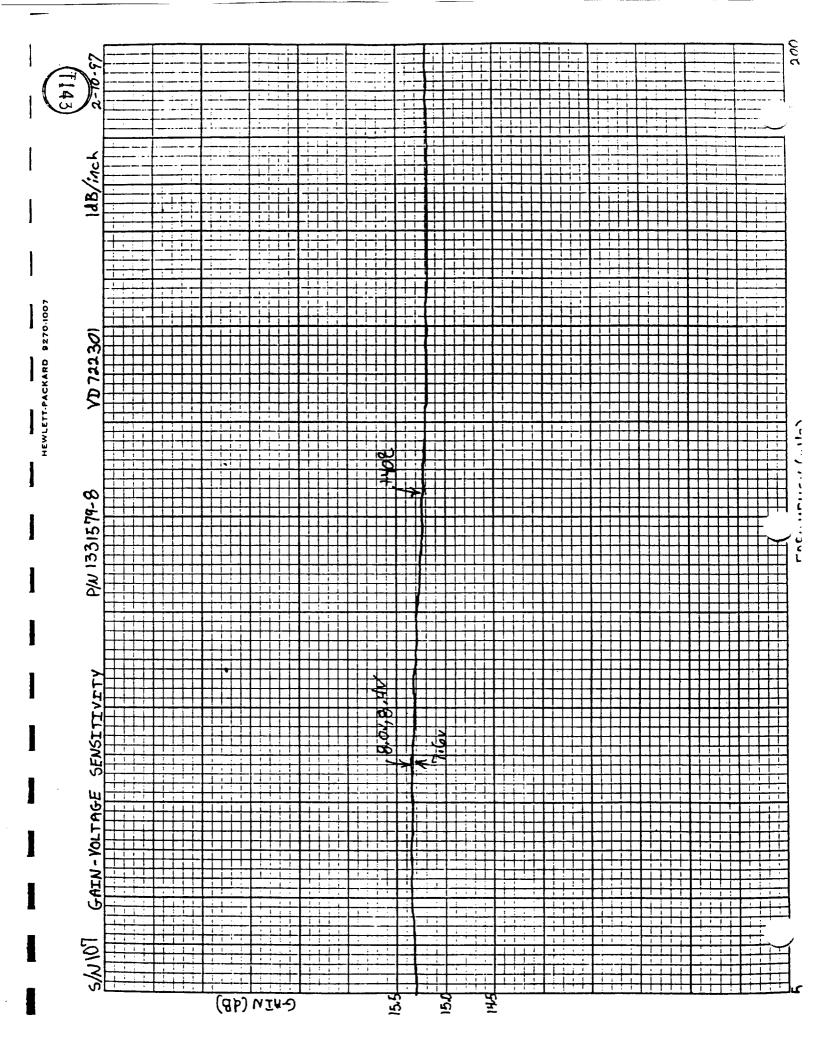
SCALE

SHEET 36 OF 38









Channel 10 Amplifier

IF Amplifier (P/N:1331579-9, S/N: 107)

APPENDIX C ATP1773 DATA SHEET MODEL NUMBER VD622301 AEROJET P/N 1331579-9

s/N 107

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.1.1	Examination of Product		Accept X Reject			2-7-57
4.2.2	* Current Limiting	200 mA maximum Reg. VOLTAGE= N/A VDC Total R= N/A ohm max. current draw =	N/A_ma			N/A
4.4	Electrical Test					,
4.4.1	* Polarity Reversal Protection	No Damage	Current N/A mA Accept N/A Reject		٠.	MA
	Short Open Protection	No Damage	Accept X Reject			2.7-57
	Output Coupling	Output shall be AC coupled	Accept X Reject			2.797
4.4.2	Gain vs. Freq. 150 MHz to 300 MHz	17.5dB Min., 18.5dB Max. -4°C to +40°C Attach x-y plot	Max 18.05 dB Min 17.87 dB Accept X Reject	Max 17.99 dB Min 17.03 dB Accept × Reject	Max 18.09 dB Min 17.88 dB Accept x Reject	2-7
	Gain Flatness	.5 dB Maximum Worse Case	Accept X Reject O.18 dB	Accept X Reject O.16 dB	Accept X Reject	2-7-17
	Gain Temp. Sensitivity	+.22 dB from -4°C to +40°C Worse Case	Accept X Reject	Accept X Reject O.10 dB	Accept X Reject	2.7.57
4.4.3	Gain-Voltage Sensitivity Input Currents	<pre> <.5dB/v Worse Case</pre>	/ 35,1 mA		.0 / dB 36.8 mA 37.5 mA 38./ mA Accept × Reject	2.757
		Attach X-Y Plot	Reject	кејест	Reject	

NOTE: * TEST REQUIRED ON PROTOFLIGHT UNIT ONLY

©Amplica,Inc.	1			
Newbury Park, CA 91320	SIZE	FSCM NO).	TAI
DRAWN	1 A '	510	25	ATP1773
ISSUED	SCAL	E		SHEET 34 OF 38

APPENDIX C ATP1773 DATA SHEET MODEL NUMBER VD622301 AEROJET P/N 1331579-9

S/N 107

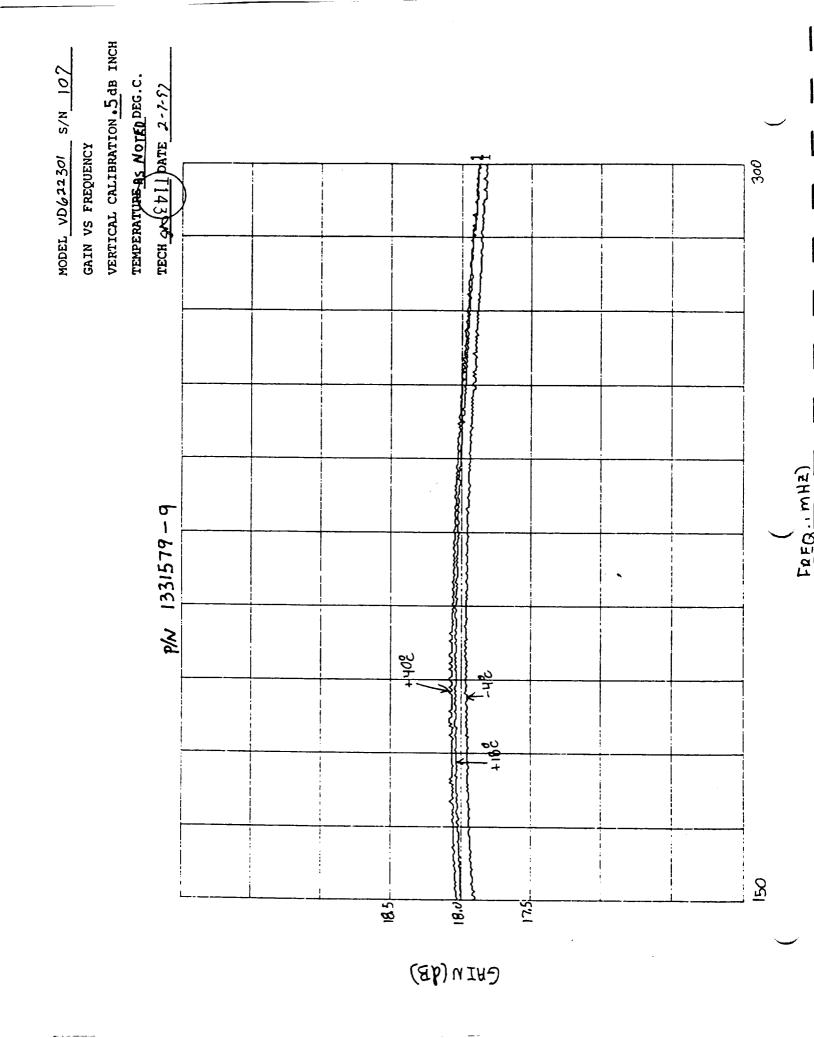
PARA	TEST	SPECIFICATION	+18°C			
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept_X Reject	-4°C	+40°C	DATE
		150 MHz 225 MHz 300 MHz	0.40 dB 0.35 dB 0.25 dB	0.20 dB 0.20 dB 0.25 dB	0.20 dB 0.25 dB 0.30 dB	2-7-
4.4.8	Stability	Stable with the input terminated into a 2.5:1 mismatch and the output at all impedance's.	Accept X			2-2-
.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 45 mA	Accept X			
		Maximum Current	39,0 _{ma}			2-10-

NOTE: Review all recorded data and signify acceptance below.

FD=44 +€3

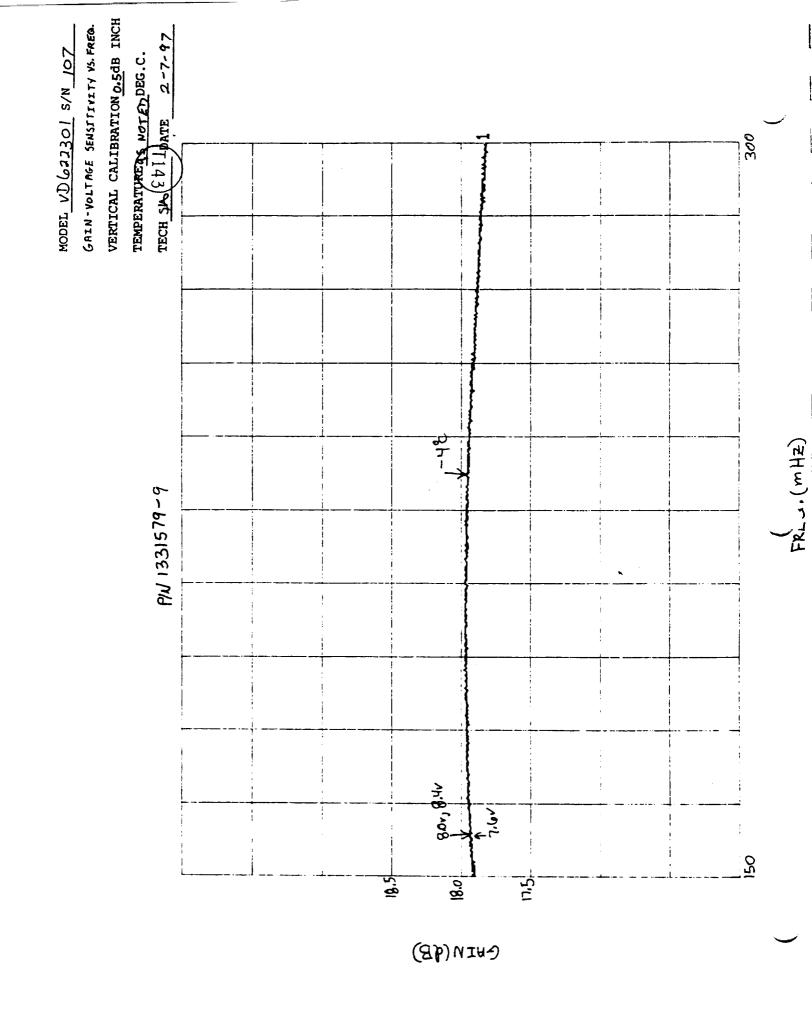
Technician Shoff (\$\tau\)	
Quality	Date: 2-10-97
Quality Assurance The June 34	Date: 2-18-97
CSI: // Land	
(h) (176 c) (176 c)	Date: 2-19-97
GSI: Majorie Shom 28	Date: 2-10-97

Amplica, Inc.					
Newbury Park, CA 91320 DRAWN	SIZE	FSCM NO 510		NMD 1 7 7 2	REV.
ISSUED	SCAL	<u> </u>	25	ATP1773 SHEET 36 OF	



FREG. (mHZ)

CHIN(9B)



FREG. (MHZ)

CHIN(9B)

Channels 11-14 Amplifier

IF Amplifier (P/N:1331579-7, S/N: 107)

APPENDIX C ATP1771 DATA SHEET MODEL NUMBER UD122301 AEROJET P/N 1331579-7

s/N_ 107

PARA	TEST	SPECIFICATION				
		Edition	+18°C	-4°C	+40°C	DATE
4.1.1	Examination of	1				
	Product]	Accept X	_	1	į
			Reject	_		2-7-9
4.2.2		i		l	ł	
	Limiting	200 mA maximum	1	}		-
	1		1			ŀ
	1	D-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1				İ
	ł	max. current draw =				1
	l	Cullent draw =	_N/A_mA	Į		
4.4	Electrical	1	,			2.70
	Test	j				2-7-5
]	j		1	
4.4.1	* Polarity		1			
	Reversal	No Damage	Current		1 '	1
	Protection	1 No bamage	N/A ma			
	_		Accept NA			
			Reject_	ì	1	1222
	Short Open	No Damage			1	2-7-9
	Protection	Damage	Accept_x	1		
	— 		Reject		1	2.2 4
	Output	Outmut abass :				2-7-5
1	Coupling	Output shall be	Accept_X			1
1	• J	AC coupled	Reject			1000
.4.2	Gain vs. Freq.	14 5-30 W		1	1	2-7-57
ŀ	255 MHz to	14.5dB Min., 15.5dB Max.	Max 15.15 dB	Max 15.10 dB	Wass 15 15 1	_
	390 MHz	-4°C to +40°C	Min 14.71 dB	Min 14.67 dB		1
1		Attach x-y plot	Accept_X	Accept_X		1
1	ļ		Reject	Reject	Accept X	1.
1	Gain Flatness	F 150		We Jede	Reject	2-7-97
l	rachess	.5 dB Maximum	Accept_X_	Accest to	l	
			Reject	Accept x	Accept_X	
- 1		Worse Case	0,44 dB	Reject	Reject	_
1	Gain Temp.		_ mp	_0,43 dB	<u>0,48</u> ਰਸ਼	2-7-57
	Sensitivity	+.22 dB from -4°C to	Accept X	1		
- 1		+40°C	Reject	Accept_X_	Accept_X	1
1	1	Worse Case		Reject	Reject	
}				0.10dB	_0.05 dB	2-7-57
4.3	Gain-Voltage				·	
	Sensitivity	<.5dB/v Worse Case	0.01 dB	ΛΛι	กก	
-		+ .2dB for 7.6v	33,9 mA	0.01 dB	0.01 dB	l
	Input Currents	7.6 to 8.4 Vdc	34/6 mA	30.6 mA	36.7 ma	
	Puc Currents	40ma MAX. 8.4v	35,2mA	31.4 mA	37.4 mA	
1	1	- 1	Accept_X	31.7 mA	_38.0 ma	
1		Attach X-Y Plot	Reject	Accept 😾	Accept ×	
				Reject	Reject	2-7-97
OTE	MD0m =	ON PROTOFLIGHT UNIT ONLY		ĺ		
ATE! ,	LEST RECUITORS	011 000	1		j.	

Amplica, Inc.				
Newbury Park, CA 91320 DRAWN	SIZE FS	51025	ATP1771	REV.
ISSUED	SCALE .		SHEET 35 OF 39	

APPENDIX C ATP1771 DATA SHEET MODEL NUMBER UD122301 AEROJET P/N 1331579-7

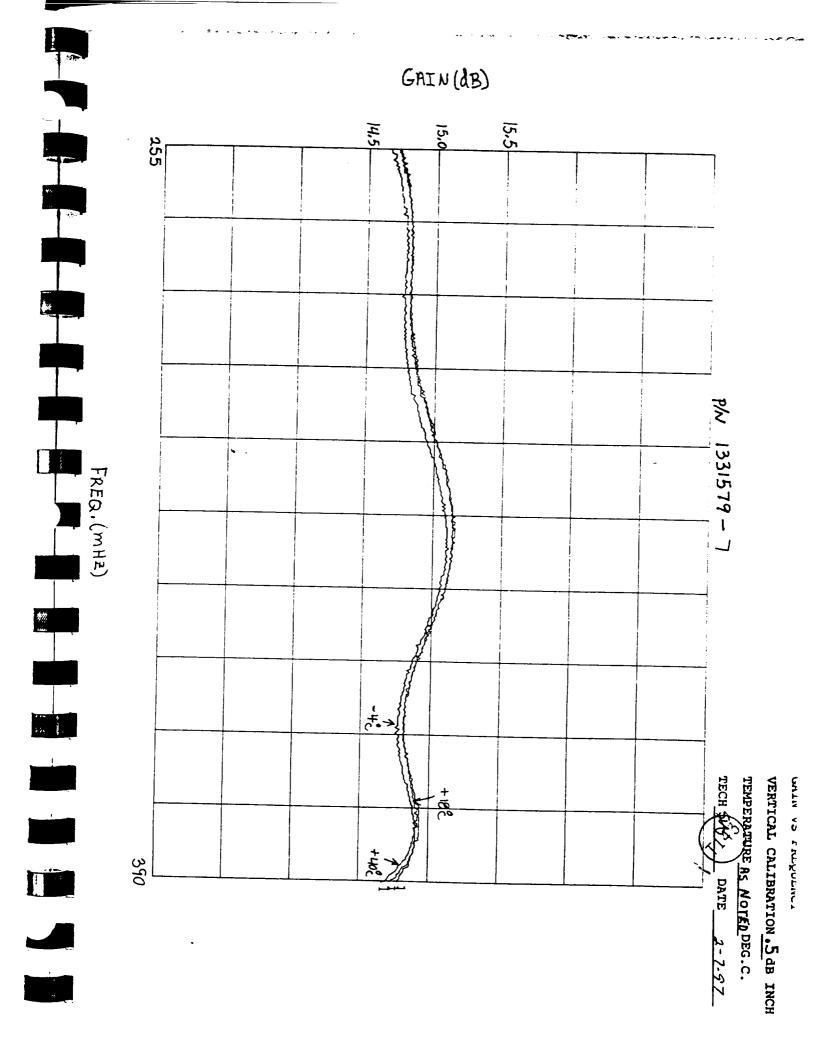
s/N_107

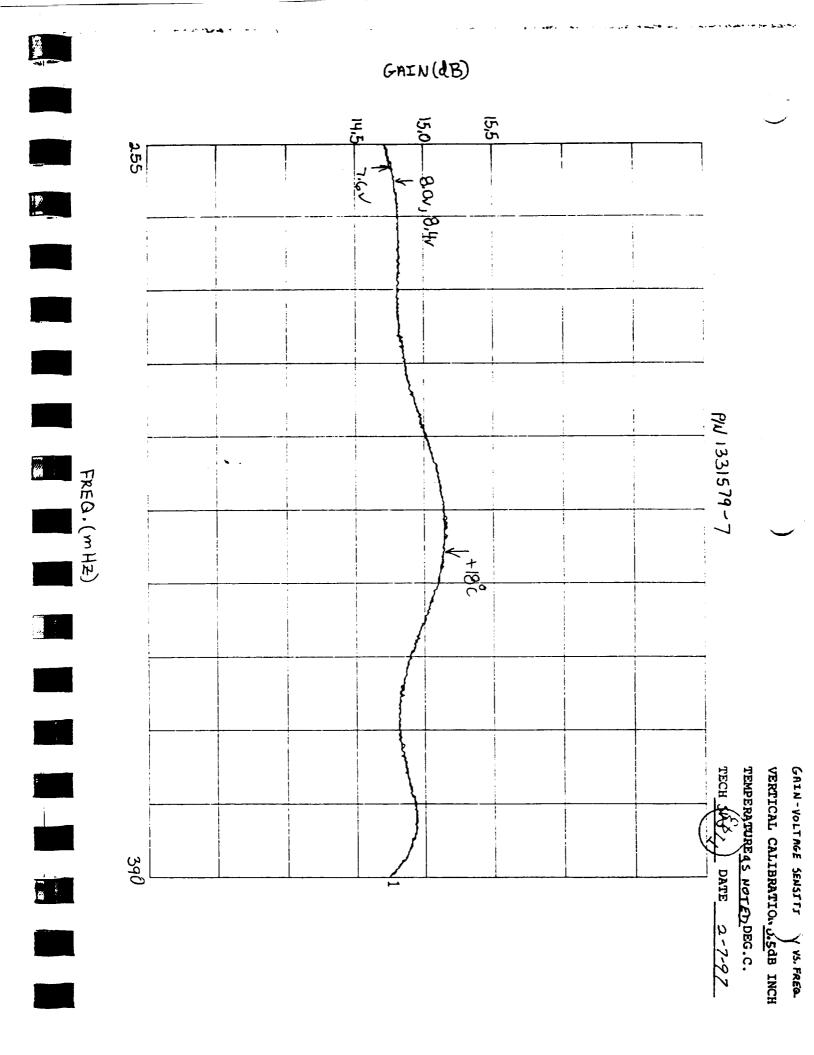
PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept X			
		255 MHz 322.5 MHz 390 MHz	0,20 dB 0,20 dB 0,25 dB	0.35 dB 0.25 dB 0.45 dB	0.20 dB 0.20 dB 0.25 dB	2-7-97
4.4.8	Stability	Stable with the input terminated into a 2.5:1 mismatch and the output at all impedance's.	Accept X Reject			<u>1.7-9</u> 7
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 45 mA	Accept X Reject			
		Maximum Current	39,3 _{ma}			2-10-57

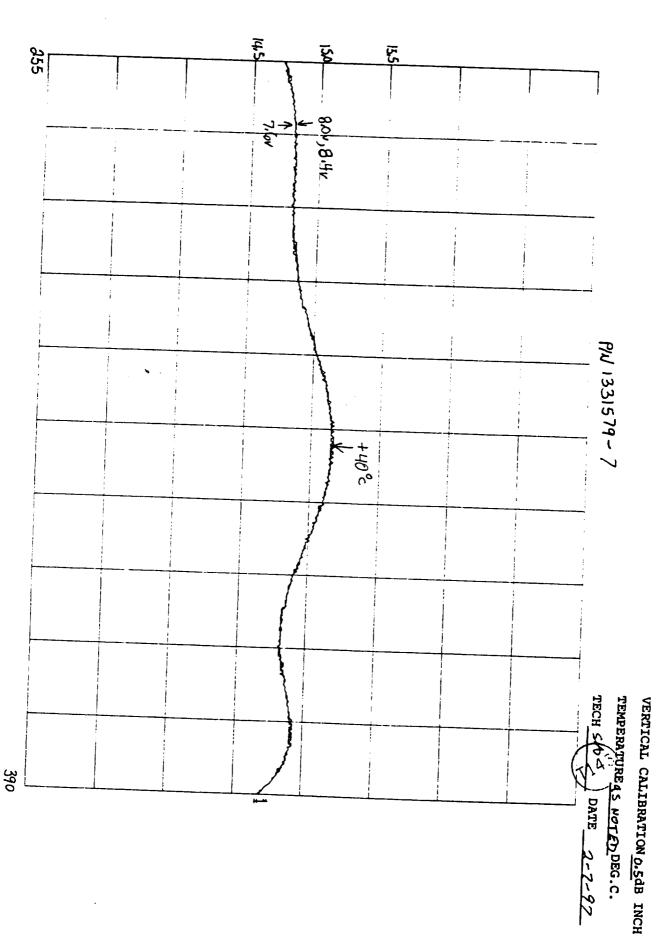
NOTE: Review all recorded data and signify acceptance bel	ow.
Technician Shoff (£t]	Date: 2-10-97
Quality Assurance the June 34	Date: 2-18-97
CSI: Miller James (176)	Date: 2-19-57
GSI: Mayrie hours	Date: 2-10-97

FORM 153

	Marica, Inc.					<u> </u>
	Newbury Park, CA 91320 DRAWN ISSUED		FSCM NO			REV.
			510	25	ATP1771	
			.E		SHEET 37 OF	39



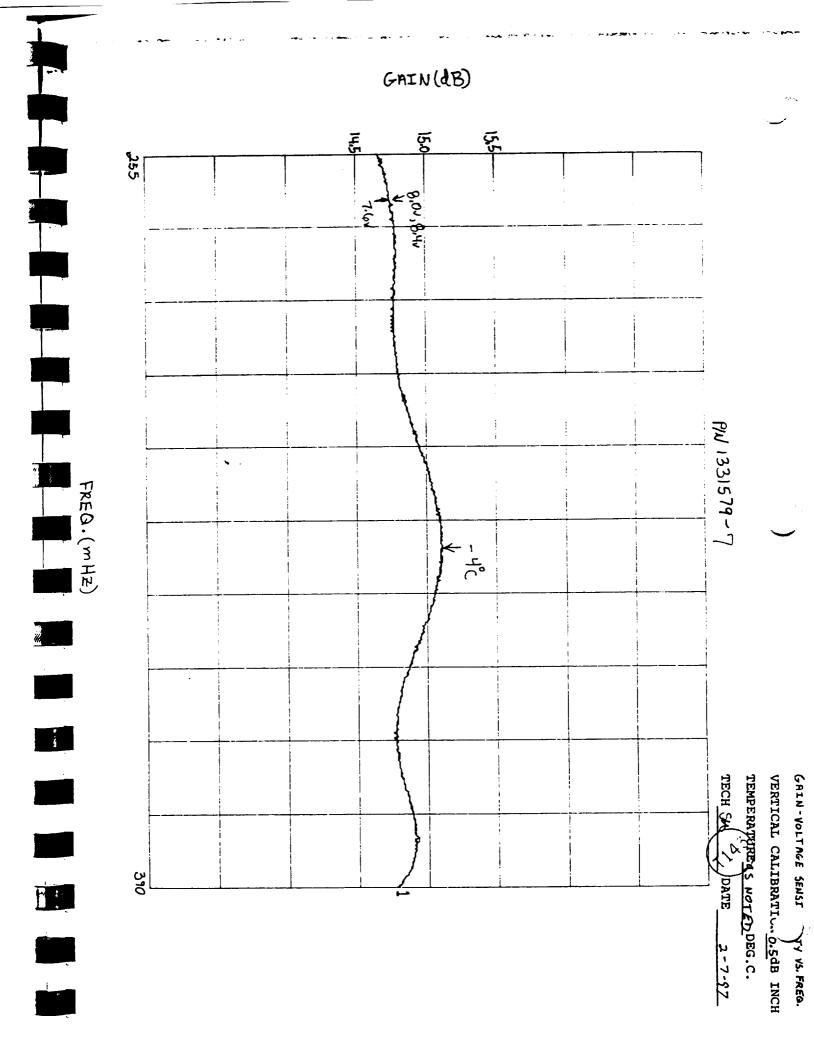




FREQ (mHZ)

MODEL UD122301 S/N 107

GAIN-VOLTAGE SENSITIVITY VS. FREQ.



Channel 11 Amplifier

IF Amplifier (P/N:1331579-10, S/N: 107)

APPENDIX C ATP1774 DATA SHEET MODEL NUMBER UD114302 AEROJET P/N 1331579-10

s/N<u>107</u>

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.1.1	Examination of Product		Accept X Reject			2-8-57
4.2.2	* Current Limiting	200 mA maximum Reg. VOLTAGE=	<i>N/A</i> _ma			2-8-97
4.4	Electrical Test		·			28.7/
4.4.1	* Polarity Reversal Protection	No Damage	Current N/A mA Accept N/K Reject			√/ A
	Short Open Protection	No Damage	Accept X Reject			<u> </u>
	Output Coupling	Output shall be AC coupled	Accept X Reject			2-8-97
4.4.2	Gain vs. Freq. 255 MHz to 390 MHz	38.5dB Min., 39.5dB Max. -4°C to +40°C Attach x-y plot	Max 39.22 dB Min 38.85 dB Accept X Reject	Max 39,39 dB Min 39,09 dB Accept X Reject	Max 39.00 dB Min 30.55 dB Accept > Reject	<u>2-8-</u>
	Gain Flatness	.5 dB Maximum Worse Case	Accept / Reject	Accept X Reject	Accept X Reject 0.45 dB	<u>a-897</u>
	Gain Temp. Sensitivity	+.44 dB from -4°C to +40°C Worse Case	Accept X Reject	Accept X Reject	Accept K Reject 0.34 dB	<u>2~8</u> -97
4.4.3	Gain-Voltage Sensitivity Input Currents	<pre></pre>	0,02 dB 30.6 mA 39.3 mA	0,03 dB 37,4 mA 39,1 mA	0,02 dB 39,8 mA 40,5 mA	
		45ma MAX. 8.4v Attach X-Y Plot	39,4 mA Accept × Reject	30.7 mA Accept Reject	Accept X Reject	<u>a-8-57</u>

NOTE: * TEST REQUIRED ON PROTOFLIGHT UNIT ONLY

® Amplica,Inc.	1				
Newbury Park, CA 91320	SIZE	FSCM NO			REV.
DRAWN	A	510	25	ATP1774	
ISSUED	SCAL	Æ		SHEET 35 OF 39	9

APPENDIX C ATP1774 DATA SHEET MODEL NUMBER UD114302 AEROJET P/N 1331579-10

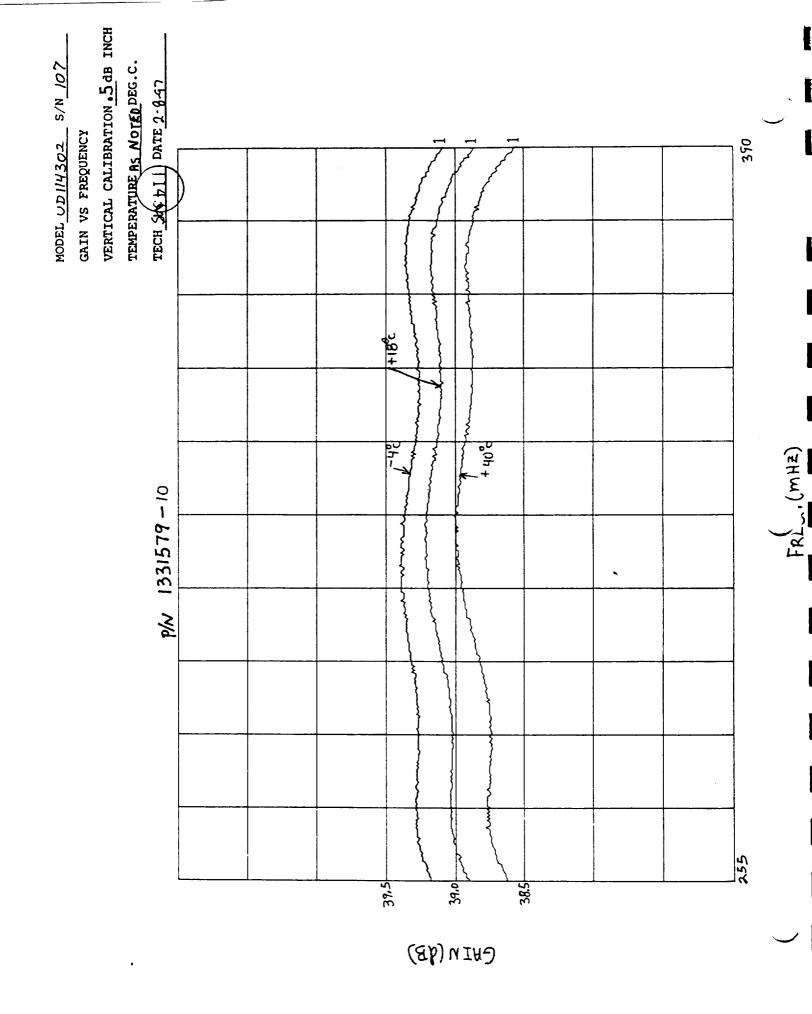
s/n 107

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	
1.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept_X Reject		1400	DATE
		255 MHz 322.5 MHz 390 MHz	0,50 dB 0,45 dB 0,65 dB	0.70 dB 0.65 dB 0.80 dB	0.45 dB 0.45 dB	2-8-8,
.4.8	Stability	Unconditionally Stable	Accept_X Reject			2-8-9
.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 50 mA	Accept X Reject		·	
		Maximum Current			ı	2-10-5

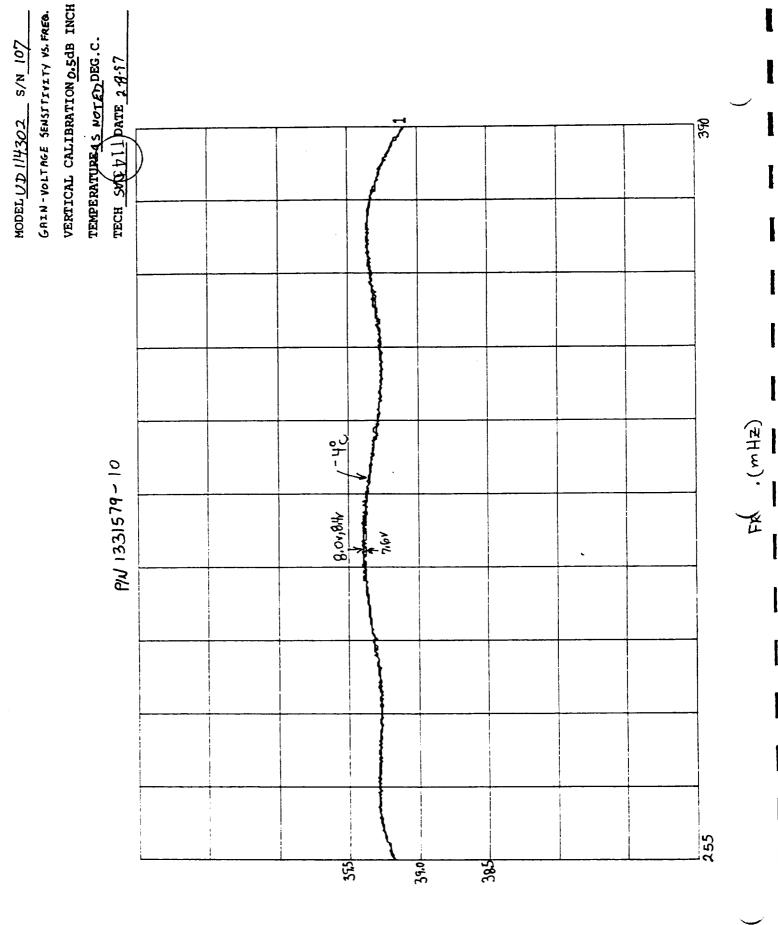
NOTE: Review all recorded data and signify acceptance below.

Technician Stoffma (Etil)	Date: 2-10-97
Quality Assurance from (34) CSI: Meles (4)	Date: 2-18-9 7
	Date: 2-19-97
GSI: Mayorie Thomas	Date: 2-10-97

Amplica, Inc.			
Newbury Park, CA 91320 DRAWN	SIZE FSCM NO. 51025	ATP1774	REV.
ISSUED	SCALE	SHEET 37 OF 39	



FREG. (mHZ)



CHIN(9B)

FREG. (mHZ)

CHIN (9B)

Channel 12 Amplifier

IF Amplifier (P/N:1331579-11, S/N: 107)

APPENDIX C ATP1775 DATA SHEET MODEL NUMBER UD415301 AEROJET P/N 1331579-11

s/N_107

PARA	TEST	SPECIFICATION				
4.1.1	P		+18°C	-4°C	+40°C	DAT
4.1.1	Examination of Product		Accept_X Reject_	-		DAT
4.2.2	* Current			-		2-10-
	Limiting	300 ->	1		1	
4.4	Electrical Test	200 mA maximum Reg. VOLTAGE=				MA
4.4.1	* Polowia					'
_	* Polarity Reversal Protection	No Damage	Current			
	Short Open	V- n	Accept MAR	`		N/A
	Protection .	No Damage	Accept × Reject			2-04
1	Output	Output shall be	1		-	202
- 1	Coupling	AC coupled	Accept X Reject			
.4.2	Gain vs. Freq.	42 Fam	1.0,000	1		2-10.9
- 1	290 MHz to	42.5dB Min., 43.5dB Max4°C to +40°C	Max 43.27 dB	мах <u>43.40</u> дв	Warra 12 a 2 .	
1	355 MHz	Attach x-y plot	Min 43.11 dB	Min 43.21 dB	Max 4300 dB	1
- 1	1	v-l htor	Accept 💉	Accept	Min 42 86dB	
	Gain Will		Reject	Reject	Reject	2-10-97
1	Gain Flatness	.5 dB Maximum	Accept_X	1.		
	}		Reject	Accept_X	Accept_X	
- 1		Worse Case	0.16 dB	Reject	Reject	12-10-0
(Gain Temp.	+.44 dB from -4°C to	l	_0.19 dB	0.19 dB	2-10-9
		+40°C	Accept X	Accept_>	Accept x	1
		Worse Case	Reject	Reject	Reject	
1				0.18 dB	0,30 dB	2-10-97
4.3 0	Gain-Voltage	< E-3m /				
	Sensitivity	<.5dB/v Worse Case	_0.01 dB	0.02 dB		
1	- 1	+ .2dB for 7.6v 7.6 to 8.4 Vdc 8.0v	36.9 mA	35.6 mA	0/01_ dB	
1	input Currents	50ma May	37.6 mA	36.4 mA	38.1 ma _38.7 ma	
		0.40	38,2 mA	36.8 mA		
1	1	Attach X-Y Plot	Accept X	Accept ×	Accept	
1	1		Reject	Reject	Reject	2-10 97
		ON PROTOFLIGHT UNIT ONLY	Į.	1		<i></i>

DRAWN SIZE FSCM NO. ATP1775	Amplica, Inc.				
DRAWN	Newbury Park, CA 91320	SIZE	FSCM NO.		REV
	DRAWN	Α	1 1	ATP1775	

APPENDIX C ATP1775 DATA SHEET MODEL NUMBER UD415301 AEROJET P/N 1331579-11

s/N_107

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept X Reject			
		290 MH2 322.5 MH2 355 MH2	0.60 dB 0.60 dB 0.60 dB	0,45 db 0,45 db 0,50 db	0.45 dB 0.45 dB 0.50 dB	<u>2-10-</u> 97
4.4.8	Stability	Unconditionally Stable	Accept X		-	2-10-57
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 55 mA	Accept_X Reject		·	
		Maximum Current	39.6ma			2-10-97

NOTE: Review all recorded data and signify acceptance below.

Technician S Holman (T143)	
Quality Assurance Mene Mina	Date: 2-18-97
CSI: The Cut	1(00) Date: Z-19-87
GSI: Mayou Showns	Date: 2-10-97

PAmplica, Inc.

Newbury Park. CA 91320

DRAWN

A 51025

SSUED

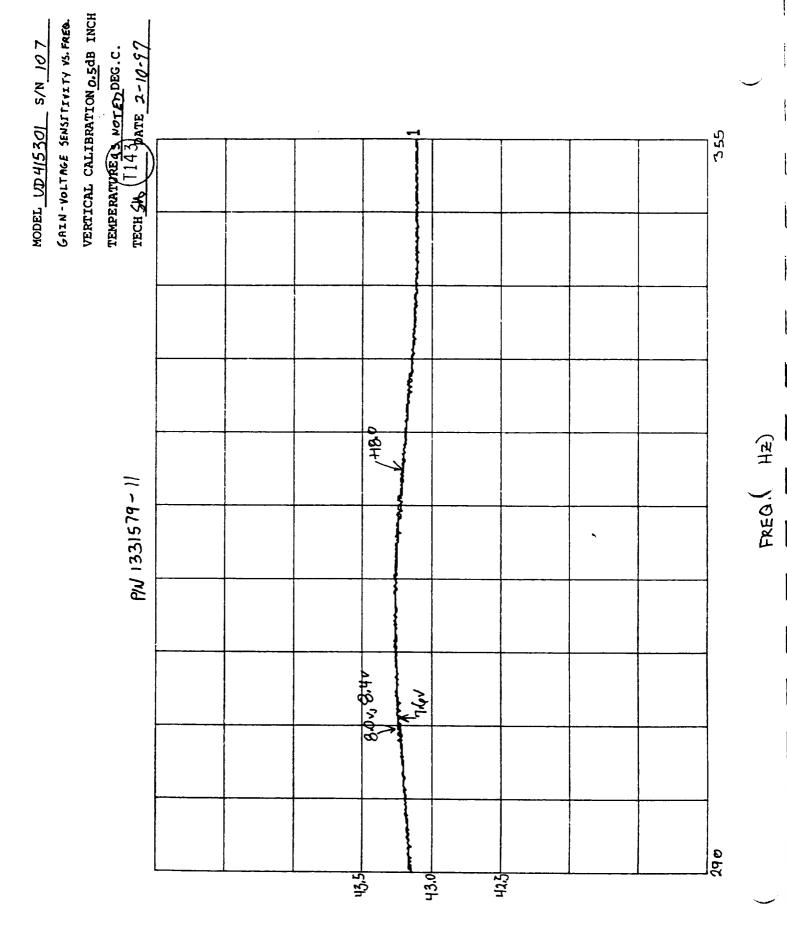
SCALE

SHEET 37 OF 39

MODEL UD415301 S/N 107

GAIN VS FREQUENCY

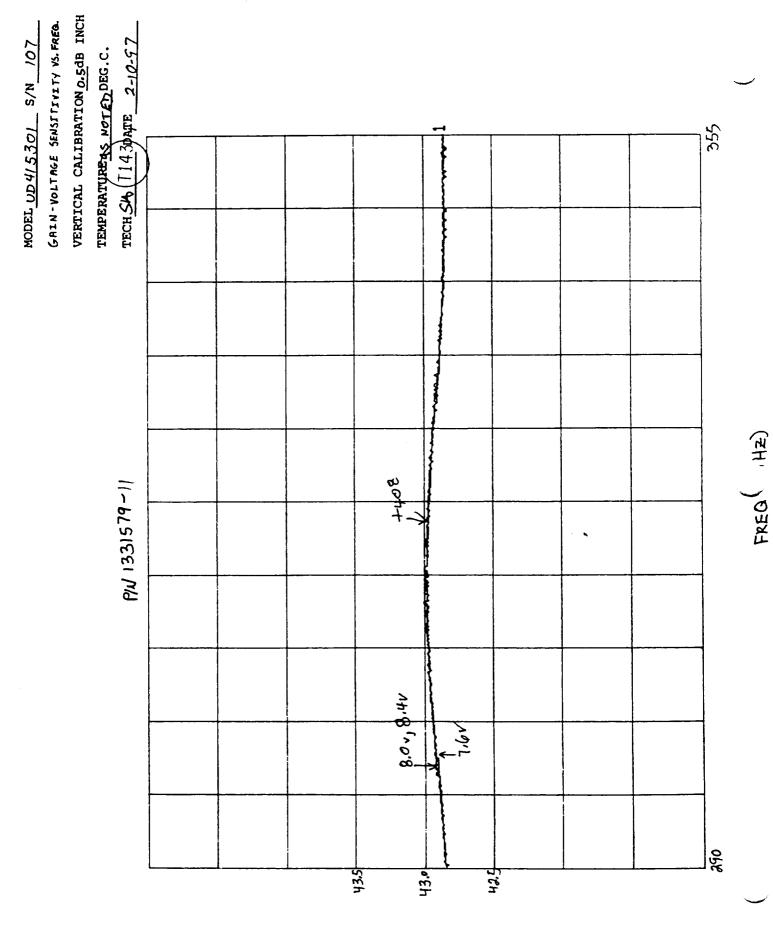
FREQ, (MHZ)



CHIN(9B)

FREG. (mHZ)

CHIN(9B)



CAIN (AB)

Channel 13 Amplifier

IF Amplifier (P/N:1331579-12, S/N: 107)

APPENDIX C ATP1776 DATA SHEET MODEL NUMBER UD315301 AEROJET P/N 1331579-12

s/N_ 107_

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.1.1	Examination of Product		Accept <u>K</u> Reject			<u> 2-89</u> 7
4.2.2	* Current Limiting	200 mA maximum Reg. VOLTAGE=	N/Ama			<u>N/A</u>
4.4	Electrical Test					-17/
4.4.1	* Polarity Reversal Protection	No Damage	Current /// mA Accept /// Reject			<u> </u>
	Short Open Protection	No Damage	Accept x Reject			2.8-57
	Output Coupling	Output shall be AC coupled	Accept			2.8.5
4.4.2	Gain vs. Freq. 305 MHz to 340 MHz	44.5dB Min., 45.5dB Max. -4°C to +40°C Attach x-y plot	Max 45.22dB Min 44.70dB Accept × Reject	Max <u>45.2</u> dB Min <u>44.9</u> dB Accept × Reject	Max 45.00 dB Min 4467 dB Accept K Reject	4 <i>4.70</i> 2-8-7
	Gain Flatness	.5 dB Maximum Worse Case	Accept × Reject O.32 dB	Accept × Reject O.29 dB	Reject 0.30 dB	2-8-9
	Gain Temp. Sensitivity	+.44 dB from -4°C to +40°C Worse Case	Accept_X_Reject	Accept × Reject O·10 dB	Accept X Reject	2-8-9
4.4.3	Sensitivity	<pre> <.5dB/v Worse Case</pre>	40.8 mA		0,02 dB - 41,2 mA - 41,9 mA	
	Input Currents	50ma MAX. 8.4v Attach X-Y Plot	Accept X Reject	HO/O mA Accept X Reject	Accept x Reject	28-9

NOTE: * TEST REQUIRED ON PROTOFLIGHT UNIT ONLY

® Amplica,Inc.]				
Newbury Park, CA 91320	SIZE	FSCM NO		ATP1776	REV.
DRAWN	Α	510	25		
ISSUED	SCAL	E		SHEET 35 OF 39)

APPENDIX C ATP1776 DATA SHEET MODEL NUMBER UD315301 AEROJET P/N 1331579-12

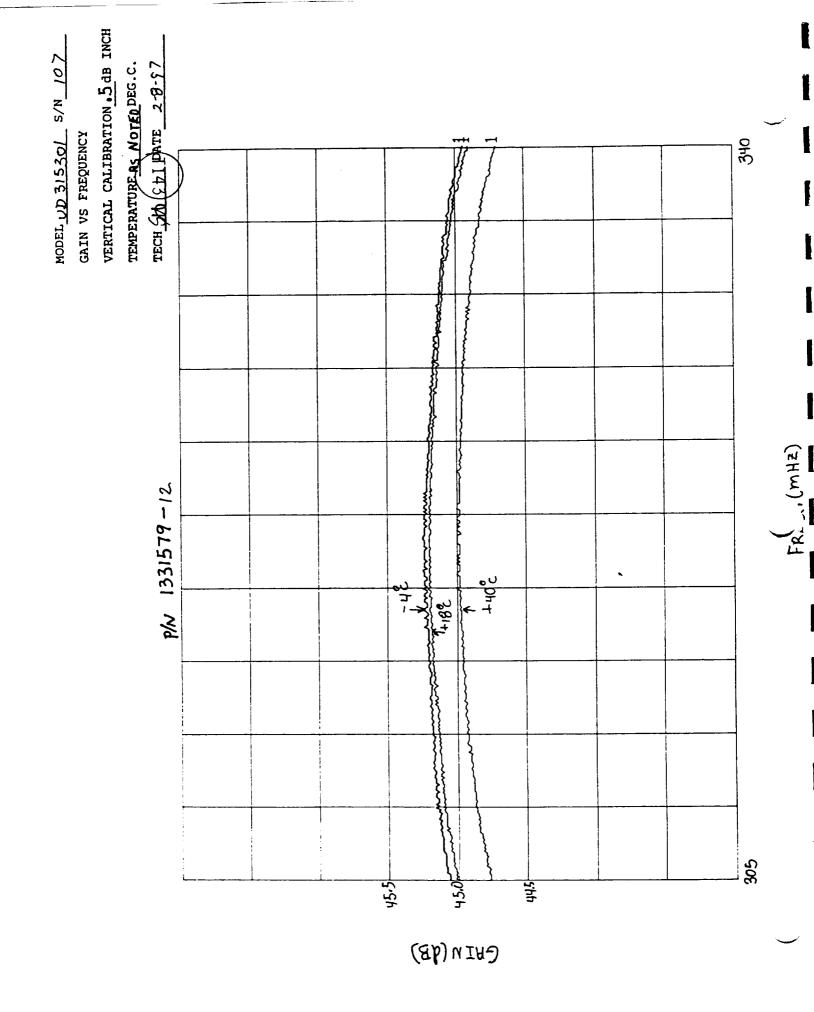
s/w<u>107</u>

PARA	TEST	SPECIFICATION	+18°C			
1.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept X	-4°C	+40°C	DATE
		305 MHz 322.5 MHz 340 MHz	0.45 dB 0.40 dB 0.50 dB	0.55 dB 0.50 dB 0.55 dB	0.45 dB 0.40 dB 0.45 dB	2-8-57
.4.8	Stability	Unconditionally Stable	Accept X Reject			2-8-5
.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 55 mA	Accept X Reject			
		Maximum Current	42,7 ma			2-10-

NOTE: Review all recorded data and signify acceptance below.

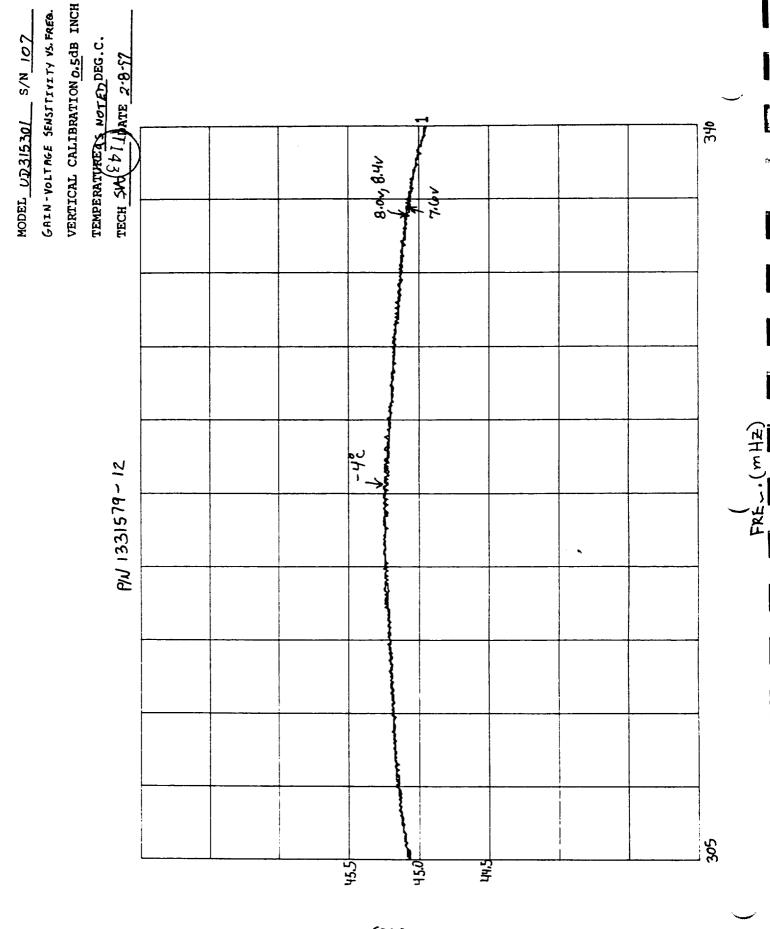
Technician (ξb)
Quality Assurance Date: 2-10-97
CSI: 11 Date: $2-18-9$
Date: 0-19-97
GSI: Thompse hom ne Date: 2-10-97

Amplica, Inc.				
Newbury Park, CA 91320 DRAWN	SIZE	FSCM NO 510	 ATP1776	REV.
ISSUED	SCAL	<u> </u>	SHEET 37 OF 3	<u> </u>

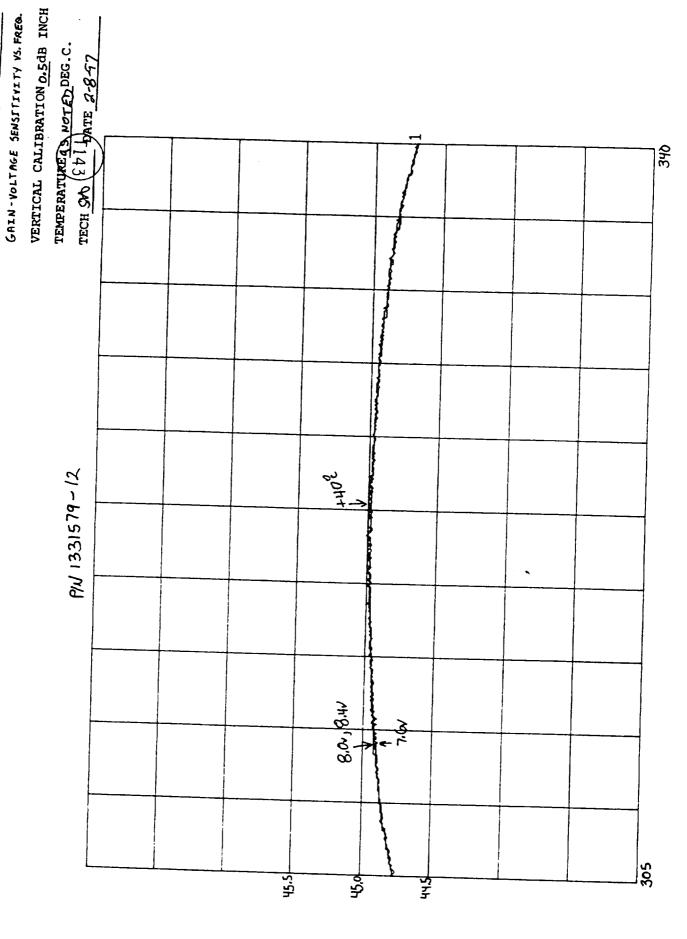


CHIN(9B)

FREG. (MHZ)



CHIN (9B)



MODEL UD3/530/ S/N 107

CHIN(9B)

Channel 14 Amplifier

IF Amplifier (P/N:1331579-13, S/N: 107)

APPENDIX C ATP1777 DATA SHEET MODEL NUMBER UD315302 AEROJET P/N 1331579-13

s/n 107

PARA	TEST	SPECIFICATION	+18°C			
4.1.1	Examination of		718-0	-4°C	+40°C	DAT
4.7.7	Product	1	Accept X	[_	
	Product		Reject	· [
4.2.2	* Current		,	· 		2-8-9
1.2.4				-	İ	
	Limiting	200 mA maximum		i		
	ł	Reg. VOLTAGE N/A VDC	1		1	1
	j	Total R= N/A ohm			j	ł
	İ	max. current draw =	_N/A mA			Ĭ
4.4	Blectrical			İ		۸,,,
	Test	i	İ	1		MA
	1000	1			1	1
4.4.1	* Polarity	1		l		ļ
	Reversal	No Damage	Current		1	
	Protection	Damaye	N/A ma	Į.		ł
	1101601108		Accept			
			Reject	1		MA
	Short Open	No Damage		İ		1 2 /2
	Protection		Accept_X_	1	j	1
	`		Reject			28-9
	Output	Output shall be				<u>~a.</u>
	Coupling	AC coupled	Accept_	İ		
			Reject	ļ		2-8-9
1.4.2	Gain vs. Freq.	48.5dB Min., 49.5dB Max.	Max 49.23 dB			1
	315 MHz to	-4°C to +40°C	Max -17.23 dB	Мах <u>49.39</u> dB	Max 48.88 dB	i
	330 MHz	Attach x-y plot	Min 49,19 dB		Min 48.80 dB	1
		- -	Reject	Accept 8	Accept_x	l
ı	Gain Flatness	,	"ealect	Reject	Reject	289
ŀ	Gain Flatness	.5 dB Maximum	Accept X	Accept X		!
1			Reject	Reject	Accept_X	l
i	I	Worse Case	0.04 dB	_0.05 dB	Reject	
	Gain Temp.			as	0.08 dB	2-8-9
1	Sensitivity	+.44 dB from -4°C to	Accept_	Accept X	1]
	=31	+40°C	Reject	Reject	Accept X Reject	J
1	ł	Worse Case		0.18 dB	0.39 dB	2-8-9
j	j	:			w	''نفڪ ا
.4.3	Gain-Voltage	≤.5dB/v Worse Case	O AE	_		
- 1	Sensitivity	1 11n c	0.05 dB	0.05 dB	0.04 dB	
	- 1	7 6 4	46.8 mA		46.7 mA	
]	Input Currents	7.0 to 8.4 Vdc 8.0v 55ma MAX. 8.4v	46,2 mA	44.8 mA	47.4 mA	
1			45,5 mA	<u>45.4</u> mA	48.0 mA	
- 1		Attach X-Y Plot	Accept X	Accept X	Accept X	
1			Reject	Reject	Reject	2-8-9
-			ļ			
OIE:	* TEST PROUTER	ON PROTOFLIGHT UNIT ONLY				

Amplica, Inc.				
Newbury Park, CA 91320 DRAWN	SIZE	FSCM NO. 51025	ATP1777	REV.
ISSUED	SCAL	E	SHEET 35 OF	

APPENDIX C ATP1777 DATA SHEET MODEL NUMBER UD315302 AEROJET P/N 1331579-13

s/N_107

PARA	TEST	SPECIFICATION	+18°C	-4°C	+40°C	DATE
4.4.7	Compression	1 dB maximum Compression AT +10 dBm Output Power	Accept_ <u>x</u> Reject			
		315 MHz 322.5 MHz 330 MHz	0,45 dB 0,50 dB 0,50 dB	0,45 dB 0,50 dB 0,50 dB	0.50 dB 0.50 dR 0.55 dB	2.8.57
4.4.8	Stability	Unconditionally Stable	Accept_X_Reject			2-8-47
4.4.9	Start-up	Capable of starting operation at -30°C and +60°C with a maximum current draw of 60 mA	Accept X Reject		·	
		Maximum Current	<u>48.3</u> ma			2-10-57

NOTE: Review all recorded data and signify acceptance below.	
Technician Stylline (8711) (2711) Date: 2-10-97	
Quality Assurance Thre June 34 Date: 2-18-97	
CSI: Milie Lyd (20) Date: 2-19-9	7
GSI: Mayori hours : 2-10-97	

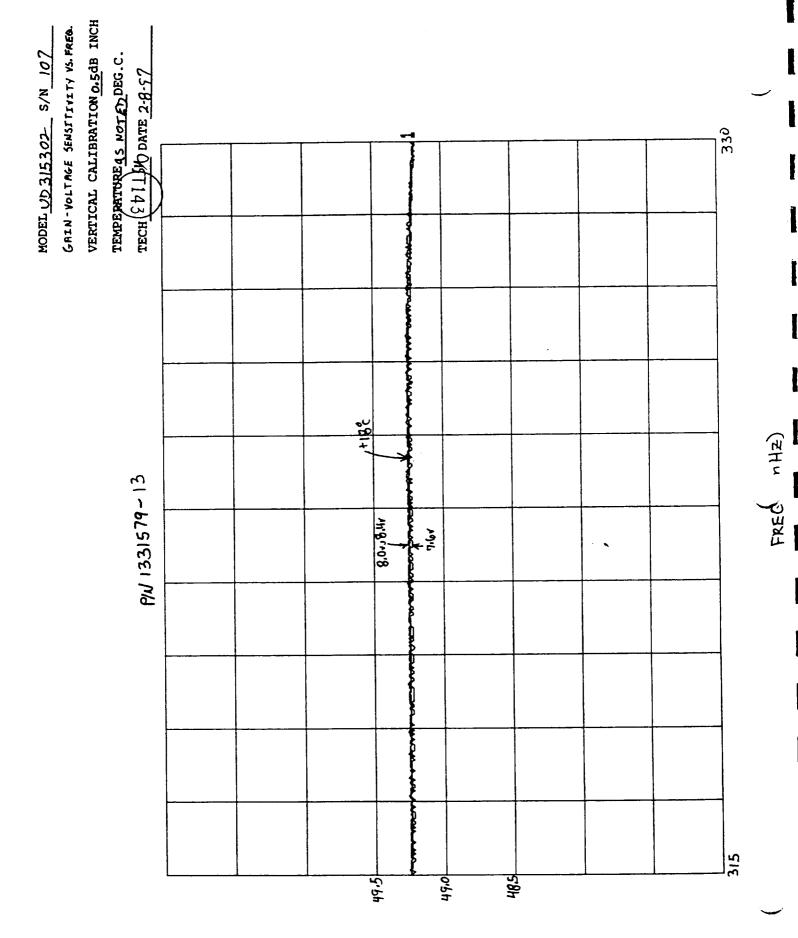
©Amplica, Inc.	7				<u> </u>
Newbury Park, CA 91320	SIZE	FSCM NO	· · · · · · · · · · · · · · · · · · ·	ATP1777	REV.
DRAWN	A	510	25		
ISSUED	SCAL	-E		SHEET 37	OF 39

VERTICAL CALIBRATION . 5 dB INCH

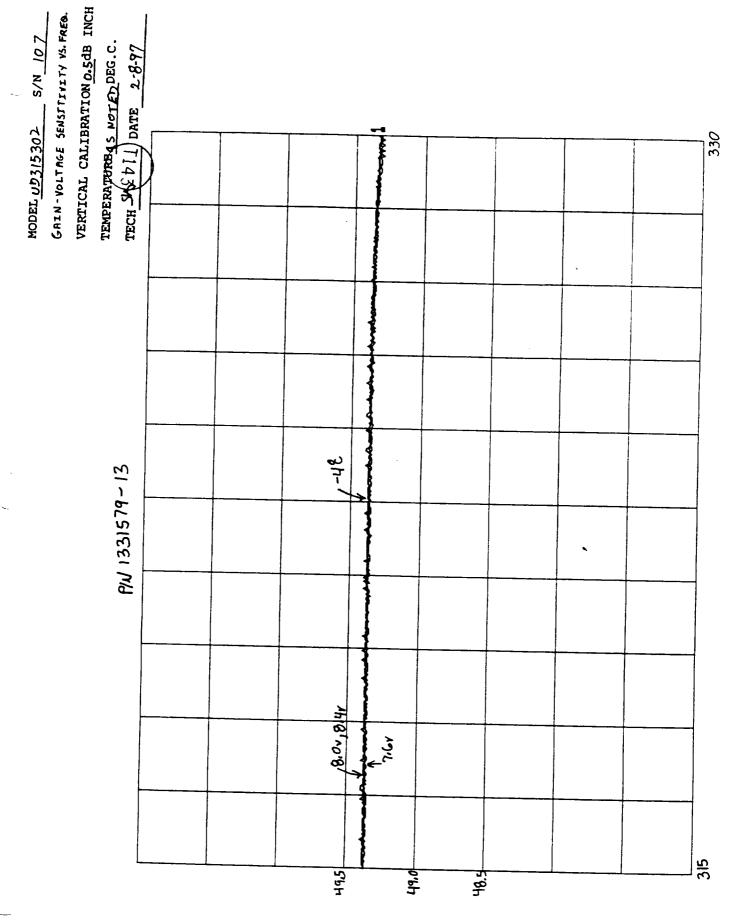
MODEL UD3/5302 S/N 107

GAIN VS FREQUENCY

FREQ, (MHZ)



CHIN(9B)



CHIN(9B)

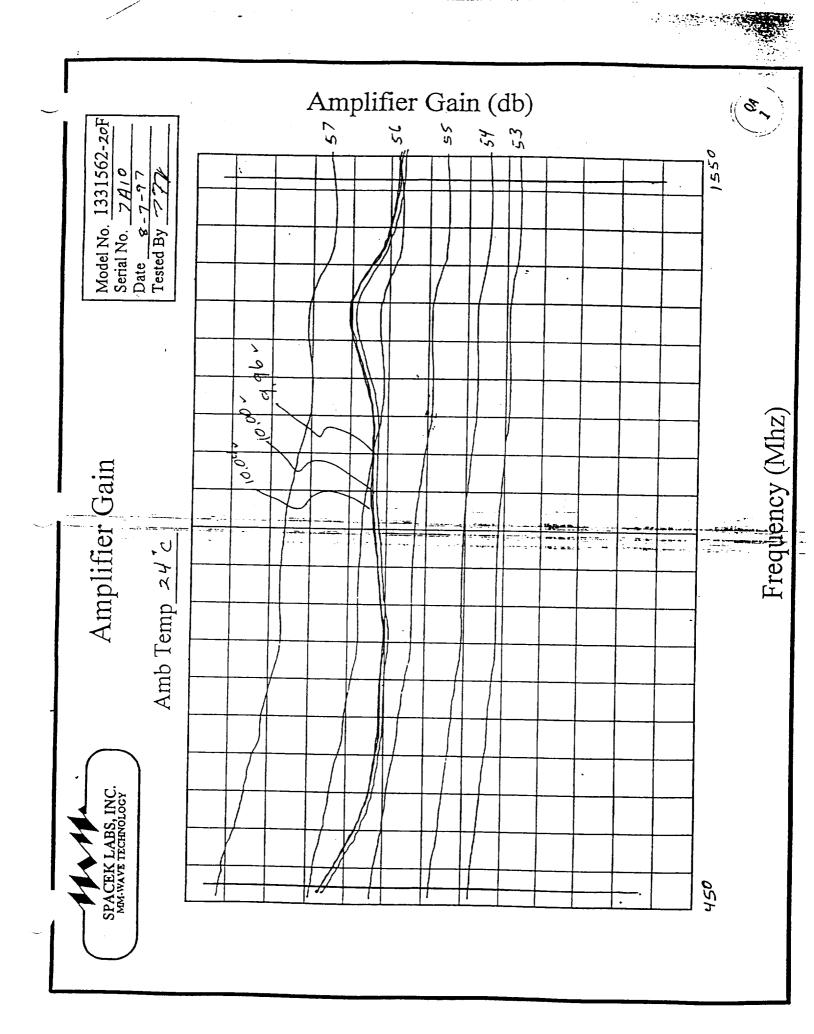
CHIN (9B)

Channel 15 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-20, S/N: 7A10)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATN	ESS TEST: ATP PA	AKAGKAPH S	<u>.1.3</u>		
GAIN FLATN (dB)ppK	ESS SPEC. GAIN (dB)ppK	FLATNESS	ACC RE	u.	
1.08	1,0		₩ 3		
				,,,, ,,	
			į.		
GAIN VERSI	S VOLTAGE SENS	מדועודע דד!	:\ RT- ATP PA	RAGRAPH 5 1	1
O/III V / LIBO	B FOLIMOL BLIN	, , , , , , , , , , , , , , , , , , ,	<u>,, ,, ,,, ,,, ,,,, ,,,,,,,,,,,,,,,,,,</u>	10101111 J.1	<u>. 7</u>
AMPLIFIER	GAIN		SPEC.		
VOLTAGE	READING (dBm)	ΔG/ΔV	ΔG/ΔV	ACC REJ	
:5 61/	C(10	. 97	2 0	QA)	
10.04	56.10	(<u>.87</u>	2.0	1 1 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
9,96	55.95			and the second s	و سیمدی و د کام ای فضاده د
ΔGv =	0.15 dB				
				DATE ACC	<u>REJ</u>
D ለ D T እነሪ	1221562 205	SDAC	TETZ O A	9-4-97	QA 🗎
PART NO	D. <u>1331562- ZOF</u>	_ SPAC	EK QA	1-1-11	
SER NO.	7A10	TEST	FAILURE:		
	/	•			_
TESTED	BY:	_ FAILURE	ANALYSIS	NO	
EMD DA	rr. 9.0.47				
END DA	TE: <u>8-8-97</u>		Spacek Lab	o Too	
END TIM	ne: 1600		212 E. Gutie	•	
				ara,CA,93101	



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature	Relative Gain	ΔG/ΔT	SPEC	ACC	REJ
T1 +40	GT1 55.88			ب ختیر	
		.014	0.035dB/*C	Oy	
T2 + 28	GT2 56, 05			1.	1
		.015	0.020dB/°C /	QA .	
T3 + X	GT3 56,35	a la stata de la comercia de la finalista. Pero de la completa de menora en la composibilità de la composibilità de la composibilità de la composibilità		1	
		. 1021	0.035dB/°C	OA.	
T4 - 6	GT4 56.65			1	

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = G_{Ti+1}$$

$$\Delta G/\Delta T = G_{Ti+1}$$

$$G_{Ti} - G_{Ti+1}$$

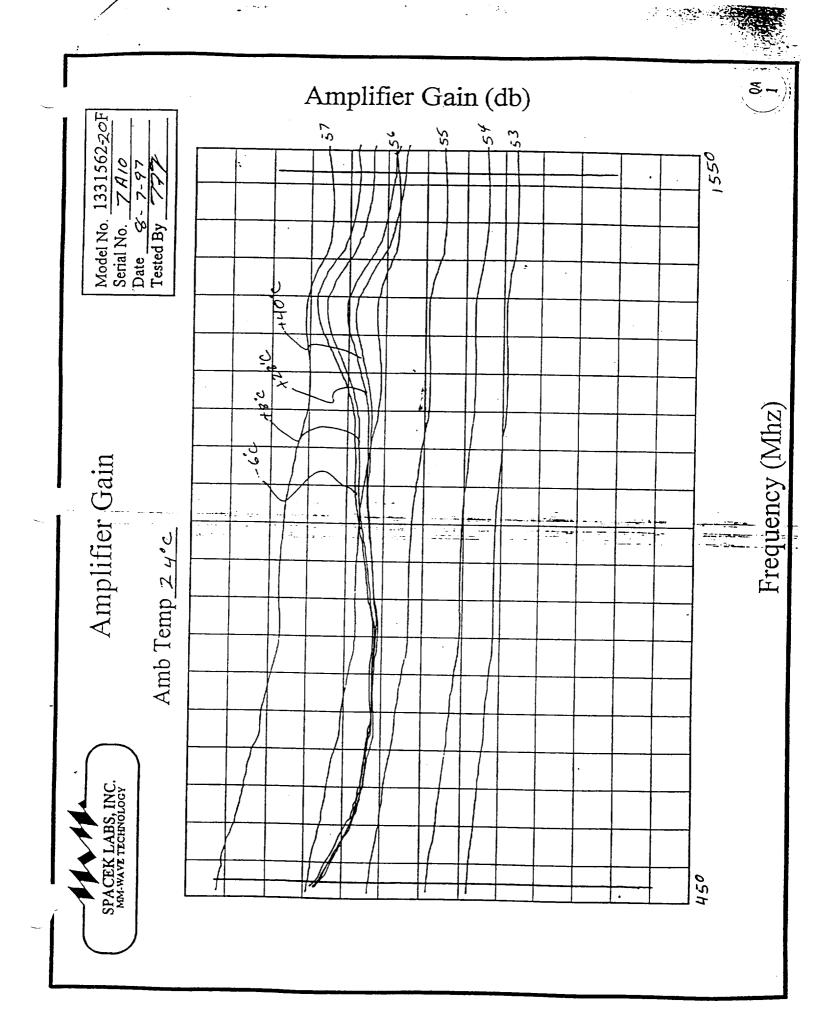
$$i = 1,2,3,4$$

$$\Delta G_{i} = \frac{0.77}{\text{dB}}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = L32 dB$ Spec 1.4dB

	Ųr	ï	
ACC	1	<u> </u>	REJ

The second secon	The same of the sa
PART NO. 1331562- 20 F	SPACEK QA 9-5-97 1
SER NO	TEST FAILURE:
TESTED BY:	FAILURE ANALYSIS NO.
END DATE: 8-8-97	Consol-Yaka Ya
END TIME: 1600	Spacek Labs, Inc. 212 E. Gutierrez St. Santa Barbara,CA,93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DA	SH#
----	-----

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC REJ
XXXXXXX	10				
X	20				
XX	50				
X X X X X X X X X	100				
Χ ,	150				
X X X X X X	200				
X	400				
X	500	-2.6	0,4	1.0	<u> </u>
X	1000	= 2.7	ail	1.0	<u>~</u>
X	1500	- 2.8	0,2	1.0	<u>~~</u>
·	Fig				•

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 8-7-97 AMBIENT ROOM TEMPERATURE °C: 2/

AMPLIFIER -	AMPLIFIER	en en en en en en en en en en en en en e	
OUTPUT POWER AMBIENT (dBm)	OUTPUT POWER (-77 K)(dBm)	Y FACTOR (dB)	AMPLIFIER NOISE FIGURE (dB)
-27.5	-30.2	2.7	2.04

Above data taken with Daden filter attached (except -19) .

Intermediate test results for information only

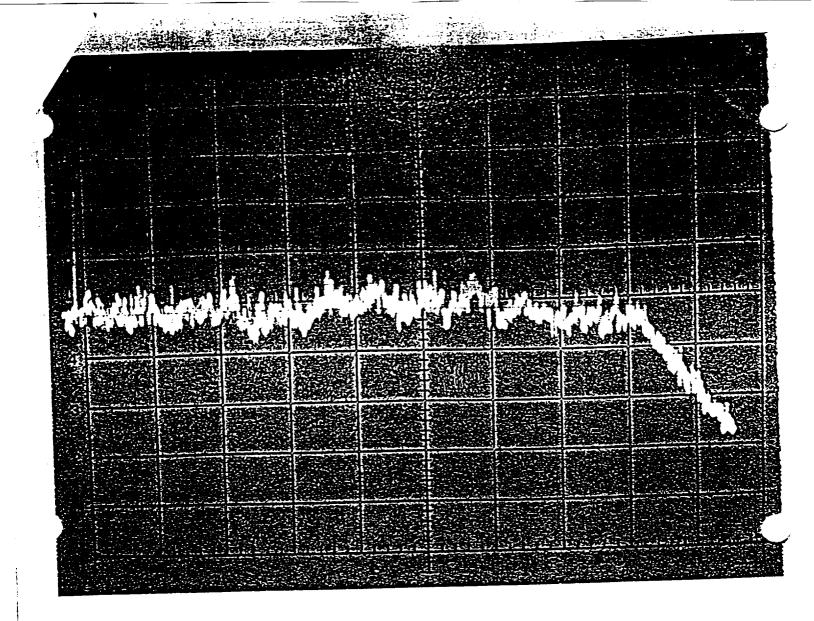
PART NO. <u>1331562- 20 F</u>	SPACEK QA	8-8-97 S-
SER NO. 7A10	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSIS	S NO
END DATE: 8-7-97	0 117-1-	Y
END TIME: 1:30 pm	Spacek Labs, 212 E. Gutier Santa Barbar	rez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

REJ

DATE:	0-71-4/AM	BIENT KOOM	TEMPERAT	URE °C: <u>72</u>	<u>/</u>		
UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC
<u>-6</u>	116	-27.00	-28.05	1.05	5.4	6.5	ON
+8	116	-27,10	-28,15	1.05	5.4	6.5	0k
+28	117	-27.20		1:0	5.6	6.5	0A
+40	1/7	-27.50	-28,50	1.0	5.6	4.5	04
Noise fig	gure change_ Above data t	0,2 dB Spe o be taken with	ec is .5dB peak the Daden filte	to peak on -20 er, except on th) AC ne -19 unit.	C OF	REJ_
<u>NEΔT-N</u>	OISE POWE	ER STABILITY	TEST: ATP I	PARAGRAPH	<u>5.4.9</u>		
Date: <u>9/</u>	<u>9/97</u> Amb	ient Room Tem	perature °C:	25			
Attach c	omputer gene	erated <i>NE∆T</i> sp	readsheet to th	is test data she	et.		-
Record t	he calculated	Nps(K) from s	preadsheet dat	a: 0,211	_		
Record 1 Accept u	Nps(K) O./	∫for dash num ted Nps(K) is le	nber from Aero ess than or equ	jet specification al to specified l	n AE-24869 Nps(K), oth	, Table II. erwise reje	ect.
					ACC R	E	
P	ART NO. <u>13</u>	31562-2 DF	_ SPAC	EK QA	<u>DATE A</u> 9 <u>-(0-97</u>	CC REJ	
S	ER NO	7A10	TEST	FAILURE:			
T	ESTED BY:	777	FAILURI	E ANALYSIS	NO		
E	ND DATE:	9-9-97					
E	ND TIME:	1600	_ 2	pacek Labs, II 12 E. Gutierro anta Barbara,	z St.		



5.4.14 Noise Power Profile

Model No.: 1331562-20F

Serial No.: 7A10

Date: 9-10-97

Tested by: 04

Spectrum Analyzer Parameters

Vertical Scale:

√ dB/div.

Scan Width:

100 mhz/Div.

IF Band Width:

10 Khz

Scan Time:

3 sec/Div.

No video filter.

SUBSYSTEM-LEVEL TEST DATA

		\rightarrow
		•
		<u> </u>

CENTER FREQUENCY OF LOS

			\vdash								_
Channel No.	-	7	ю	4	5	9	7	∞	9-14 ***	15	
Specification (GHz) *	23.8	31.4	50.3	52.8	53.596	54.4	54.94	55.5	57.290344	89.0	
Setting Accuracy (+/-GHz)	0.008	0.008	800.0	0.003	0.003	0.003	0.003	0.008	0.000086	0.08	
Measured (GHz) **	23.798	31.400	50.301	52.799	53.597	54.400	54.940	55.501	54.940 55.501 57.290310	88.983	
									57.290322		

^{*} Specification in vacuum condition.

^{**} Measured at ambient pressure (standard atmosphere).

^{***} Measured data for PLO No. 1 and No.2.

TEST DATA

FOR

AMSU-A2 (P/N: 1356441-1, S/N: F01)

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TEST	DATA	SHEET.	3

LO Frequency Test Data (Paragraph 3.5.1) (A2)

Test Setup Verified: Signature	Baseplate Temperature (T_B) 23.3 °(
--------------------------------	---------------------------------------

Compo-	Channel	V _b (V)	l _b (mA)		P _{de} (mW)			o(GHz)	
nent	No.			Required (Max)	Measured	Pass/ Fail	Required	Measured	Pass/ Fail
LO	1	10,01	78.2	2,000	782.8	P	23.800 ± 0.008	23.798	P
	2	10.02	116.5	2,100	1167.3	7	31.400 ± 0.008	31.399	P
Mixer/ Amps	All	10.02	84.2	900	0 43.7				
TOTAL				5,000	27938				

Pass = P, Fail = F

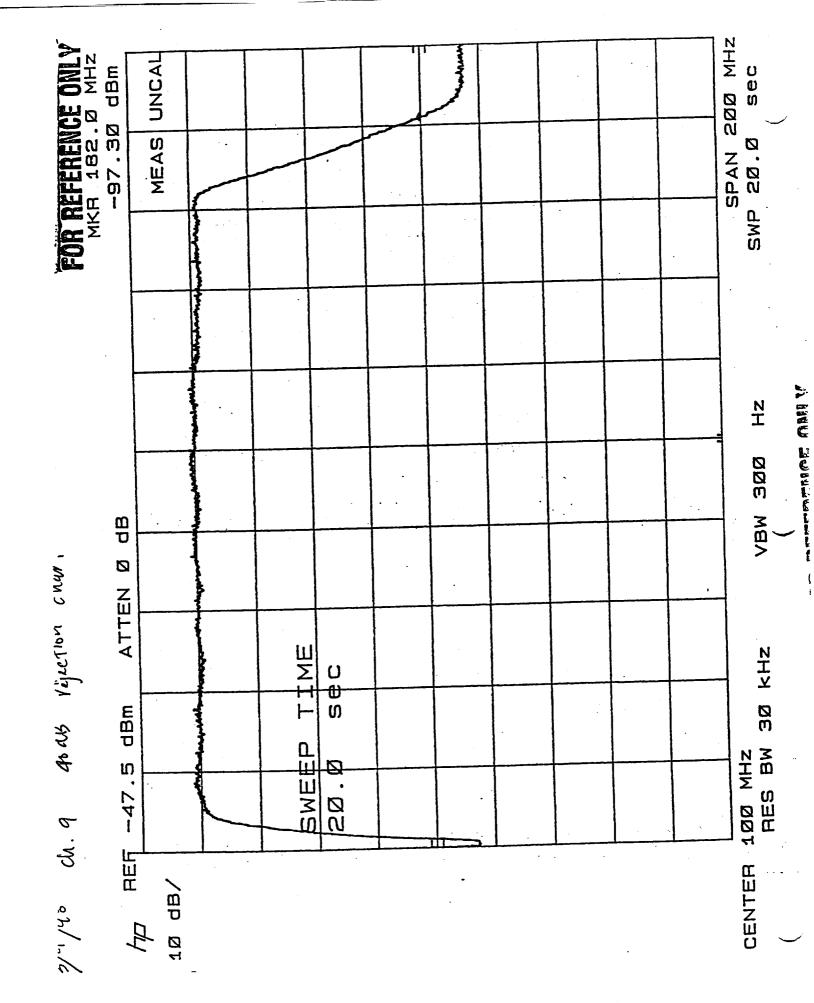
Part No.: 135 644 1-1	Test Engineer: Tony Lun a
Serial No.:FO	Quality Assurance: (832) MR & 98
	Date: 3/6/98

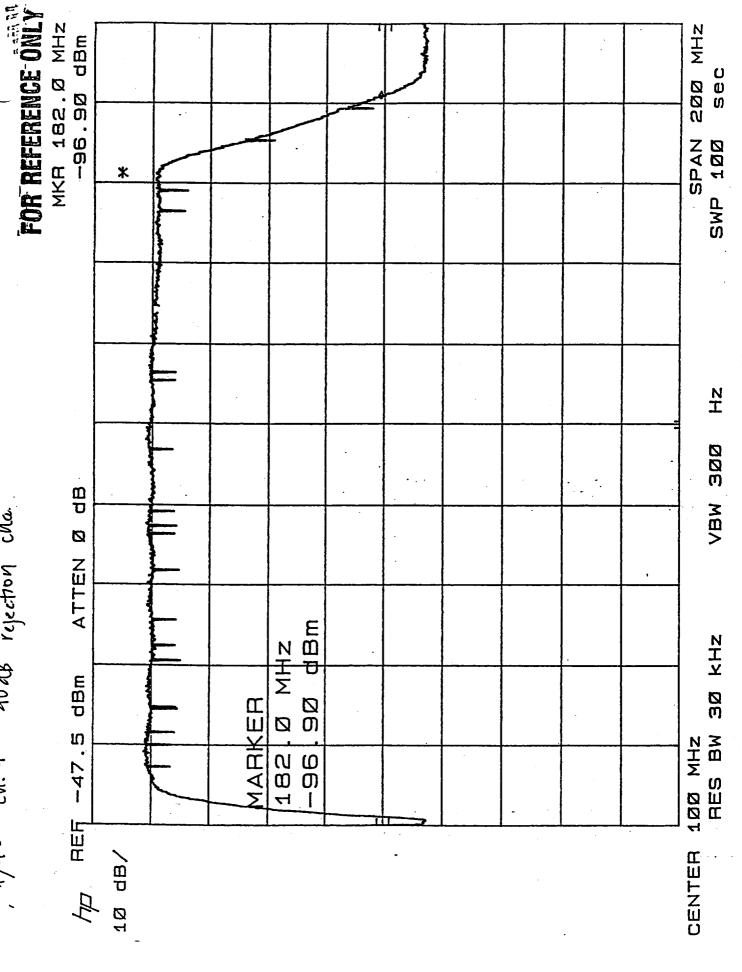
			\mathcal{L}
		-	
			\sim

Test Data with Spectrum Analyzer with Uncalibrated Message

Some of the AMSU-A receiver test data for the out-of-band rejection are plotted with UNCAL message on the Spectrum Analyzer screen but do not compromise the adequacy and accuracy of the data. This is assured by comparing the two attached data plots: one with calibrated (without UNCAL message) and the other with uncalibrated (with UNCAL message). The UNCAL message on the Spectrum Analyzer is a result of reduced sweep-time to reduce test time.

The IF bandwidth (RBW) of the Spectrum Analyze(HP 8566B) is an analog filter, so it consists R, L, C's that need some time to charge. The minimum sweep-time in the Spectrum Analyzer to show the calibrated display (without UNCAL message) is the minimum sweep-time for the IF filter to get charged by a sinewave signal. In the case where the stimulus signal is broadband noise as in our case or a signal that changes its amplitude slowly, like the response of a low-Q filter (a filter with a rise and fall-time much slower than those of the Spectrum Analyzer RBW filter) the sweep-time can be shorter. Therefore, the minimum sweep-time to get an accurate response can be decreased until there is a change in the display. If we test bandpass filters with similar characteristics, we can assume that the same minimum sweep-time can be used to test all of them. However, if the sweep-time is reduced too far beyond the limit, a change in the display will be observed.





10 db rejection cha

1/4 c CM. d

A 1860 Bundansu ou

<u>Carl</u>

5 dB/ SNVLOSS 18.0 dB SPAN				: : : : : : : :	(
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S dB/ CIIVLOSS - ZB.B SWEEP TIME dB SWEEP TIME ZB.D msec		DENOMBAN	60	•	I Z		55 dam
SWEET TIME	• • • • • • • • • • • • • • • • • • •	• • • • • •	· .•	- - •• •• • • • • • • • • • • • • • • •	: !		ないだり
SWEED TIME 20.0 msec					·		
SWEEL TO MS & C. D. MS		•			· · · · · · · · · · · · · · · · · · ·		
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TEST DATA SHEET 6 IF Output Test Data (Paragraph 3.5.2) (A2)

Baseplate Temperature (T_B) 24.1Test Setup Verified: Signature

Compo-	Channel	V _b (V)	l _b (mA)	P _o (dBm)	Atten (dB)	Po	(dBm)	
nent	No.		-			Required	Measured	Pass Fail
LO	1	10.01	78,2	-27.70 -22.02	5.0	-27.0 ± 1.0	22.02 -27.10	P
	2	/0.02	1/6.5	-23.45	3.0	−27.0 ± 1.0	-23:45 3:45 3:44 -26:47 -26:31	* P
Mixer/ Amps	All	10.02	84.2					

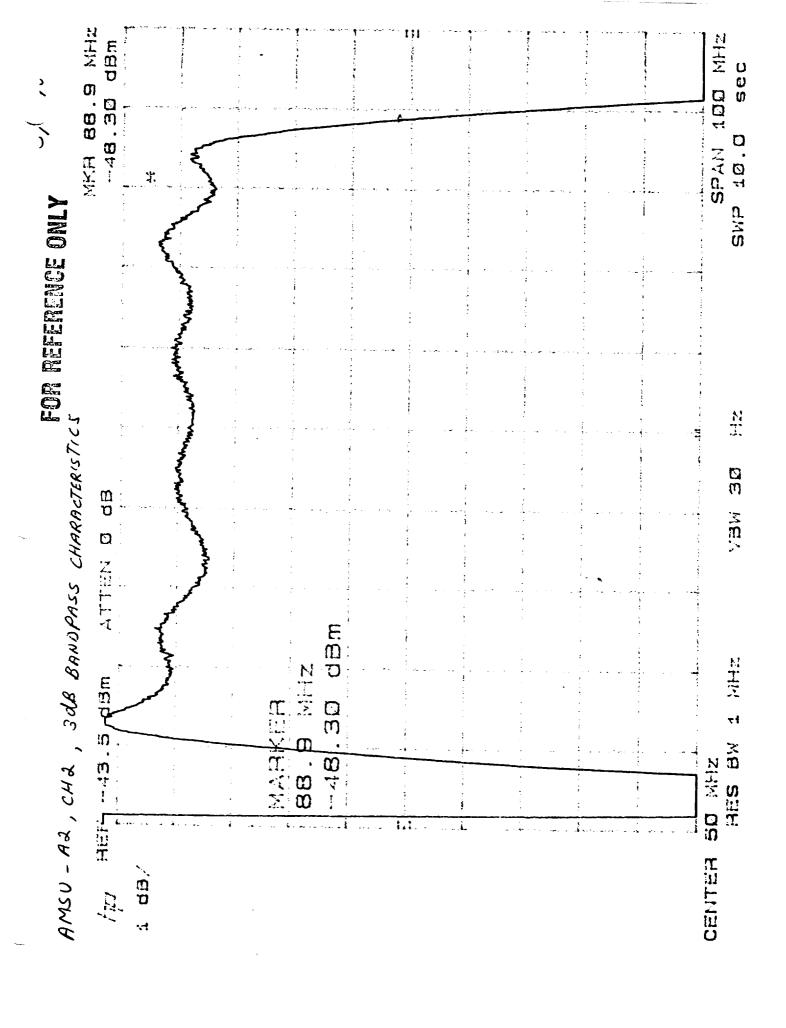
Pass = P, Fail = F

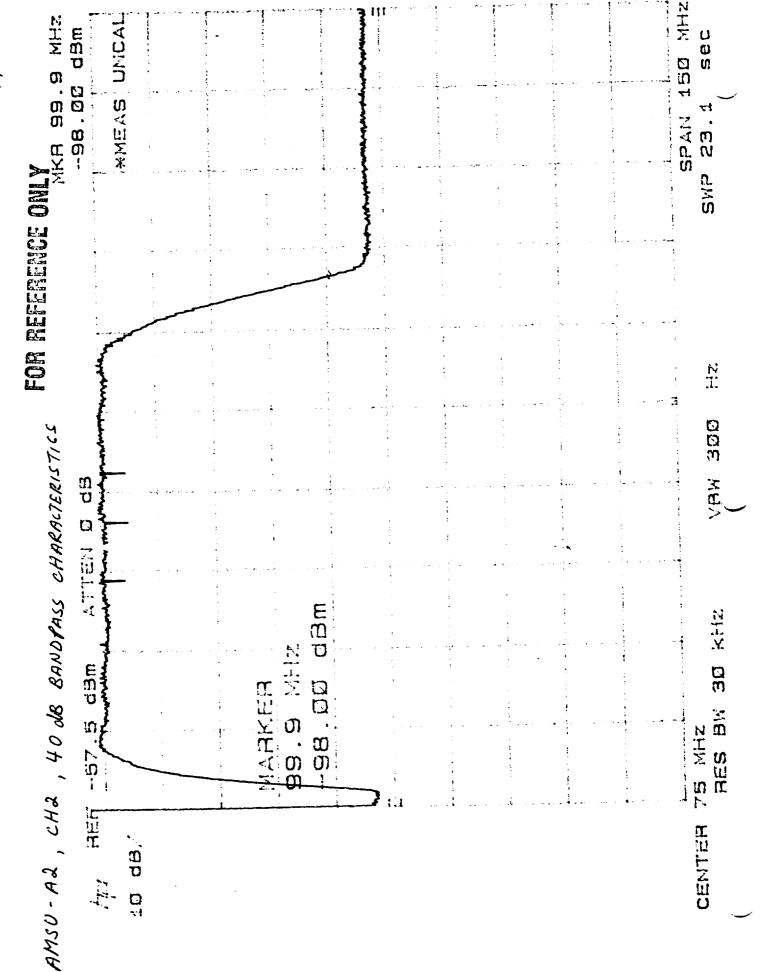
Part No.: 135 6441-1	Test Engineer: Jony Luna
Serial No.: F61	Quality Assurance: (259) 11/8 9 '98
	2///00

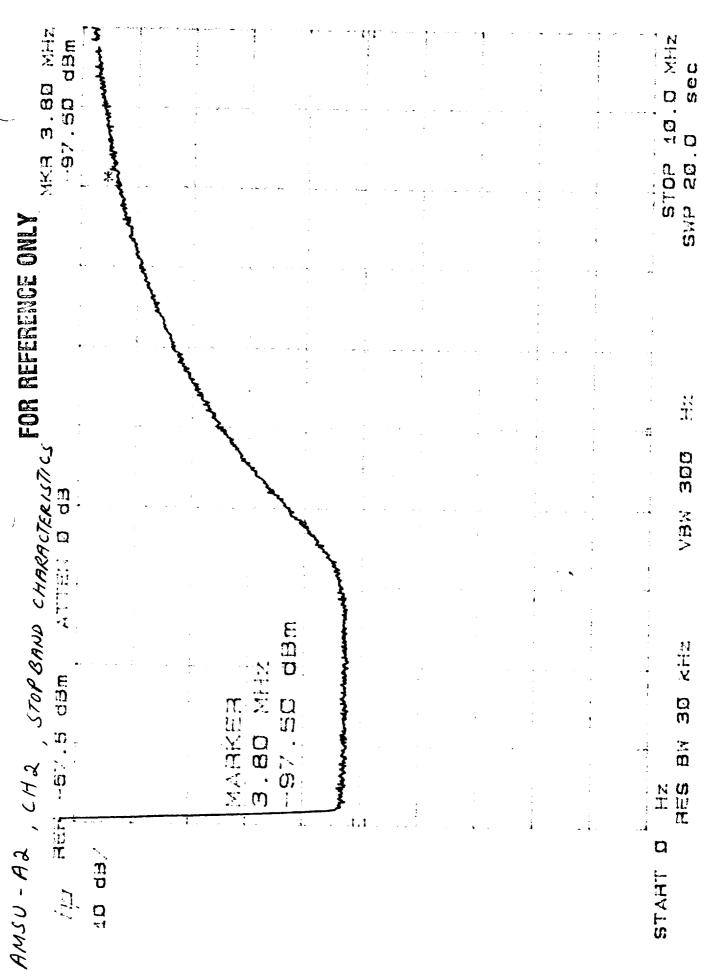
TEST DATA SHEET 9

			Bandpas	ss Characteristics	s Test Data (Parag	graph 3.5.3) (A2)		•
Test Se	tup Verified:	-71	Signature	→ Base		re (T _B) <u>23.% °</u> C		
. •			4					
Compo-	Channel	ν _ь (ν)	I _b (mA)		Frequency (Hz)		Frequency IHz)	Pass/ Fail
nent	No.			Lower	Higher	Required MAX.	Measured], ·
LO	1	10.02	78.2	9.1	134.5	270	125.4	P
:	2	10,02	116,6	9.4	88.9	180	79.5	P
Mixer/ Amps	. All	10.01	84.2					
Compo-	Channel	V _b (V)	I _b (mA)	(M	Frequency Hz)	(MI		Pass/ Fail
nent	No.			Lower	Higher	Required MAX.	Measured	
LO	1 ·	10,02	78,2	3.8	146.8	351	143.0	P
	2	· /0,02	116.6	3.8	9 9.9	234	96.1	P
Mixer/ Amps	All	10.01	84.2					
							()	
	1356		. /	·	Test Engineer	(/7A)	MAR 9 '98	
Serial No.:	FOI	<u> </u>			Quality Assura		4 20. V / V	<u> </u>
				n en en en en en en en en en en en en en	Date: 3/	6/98		

A H K E H L G G G B M H Z G G G G B M H Z G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G M H Z G G G G G G M H Z G G G G G G M H Z G G G G G G M H Z G G G G G G G G G G G G G G G G G G	7 HELL 18.	. 8 disa Ai	}		:	*	00.00-	E III
	10 aB,				•		ので出た水	מאטעח
			**************************************				Try same seems	
146.8 MHZ 99.00 dBm		•	:					
	2 2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							
			1	•				
	*							
			: : :				*	
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	•					:		







TEST DATA SHEET 12 (Sheet 1 of 3)

N	ise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: Hearth Baseplate Temperature (T_B) 25.2 °C

Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation
				24.2	-92316	.00020	-193.9	-63541	.00023
				24.2	-92326	.00021	-193.9	-63639	.00019
				24.2	-92316	.00020	-/93.9	743663	.00017
				24.2	-923/3	.00021	-193.4	7.63653	.00017
LO	1	10.02	73.2	24.2	-92297	.00021	-/93.9	63748	.0002
				24.2	-92304	.00021	-193.9	-, 43482	.000/8
				24.2	-92274	.00019	-/93.9	-63750	.0002
				24.2	-92273	.00022	-193.9	- 43773	.00019
				24.2	-92266	.00020	-193.9	-,43753	.00015
				24.2	-92266	.00020	-193.9	63781	.0001
Mixer/	All	10.01	84.2						
Amps	1	10.01	5,						

Part No.: /35644/-/	Test Engineer: Rundby
Serial No.:	Quality Assurance: (992) MAR 9 98
	Date: $\frac{3/6/98}{}$

TEST DATA SHEET 12 (Sheet 2 of 3) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified:	Then Signature	Baseplate Temperature (T_B) $25.2^{\circ}C$
----------------------	----------------	---

		NF	(dB)				NPS (K)	**************************************	
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required	11000000		.	
		Weasureu	Average	rass/raii	(Max)	Measured	Average	Delta	Pass/Fail
1	-2:85 4,55	3.78			0.09	0.04			
: !	·	3,79			0.09	0.00			
; ; ;		3.80			0,09	0.04			
		3,80			0.09	0.00			
		3.81.			0.09	0.02			
		3.80			0.09	0.04			
T		3.82			0.09	0.07			
		3,82			0.09	0.05			
		3.82			0.09	0.04	译 W		
		3.82			0.09	0.04			
	4,55		3.81	ρ	0,09		0.04	0.07	P

Part No.: /356 4 4 1 - 1 Serial No.: F0 /	Test Engineer: Thinkly
Serial No.:	Quality Assurance: Date: 3/6/98

FOR REFERENCE ONLY

AMSU-A TEST S/N FO /

AMSU	J-A2, CH1,	NOISE FIG	JRE AND NOISE	POWER STABILITY	Y TEST DATA	5/6/38
	TEMP_TEST		VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	297.35	92315710 63541378	.00019991 .00022970	3.77942007	.04185851
2 3	COLD TEST WARM TEST	79.25 297.35	92325990	.00020744	3.79328398	.00210158
· 4 5	COLD TEST	79.25 297.35	63639213 92315638	.00019298 .00019299		.04448093
6	COLD TEST	79.25 297.35	63663971 92312633	.00017023 .00020738	3.79816659	
7 8	WARM TEST COLD TEST	79.25	63653154	.00017087 .00020545	3.79682736	.00130553
9 10	WARM TEST		92297226 63748460	.00019583	3.81308176	.02139291
11	WARM TEST	297.35	92303925 63682991	.00021444 .00017934	3.80231995	.04160816
12 13	WARM TEST	297.35	92274501 63750388	.00018722 .00022956	3.81579245	.06805419
14 15	COLD TEST		92273489	.00021665	3.81945001	.04818275
16 17	COLD TEST		63773451 92265720	.00018680 .00019917		
18	COLD TEST	79.25	63752721 92266068	.00014871 .00020129	3.81708510	.04393011
19 20	WARM TEST		63780795	.00017014	3.82137125	.03789137

CH. 1),125.4 MHz

NOISE FIGURE AVERAGE (dB) = 3.80569955551

NOISE POWER STABILITY (K) = .0350806036513

NOISE POWER STABILITY DELTA (K) = .0667486652156

 $NPS_MAX(K) = .0680541919666$ $NPS_MIN(K) = .00130552575098$

INTEGRATION TIME = .158

		A-IISH A	2 CHI S	AMSII-A2 CHI S/N E01 E1 ICUT BECEIVER	Curpec													
		(BDE 138 4 MILT	A MAIL 9	TO EDE	UNI REC	EIVER SHELF	֡֝֞֝֝֜֝֞֜֝֝֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֜֜֓֓֓֓֓֓֓֡֓֓֡֓֡֓֓֡֓					To	290					Γ
		(Drr 123	.4 MHZ &	& LO FREQUENCY 23.7984 GHZ)	UENCY 23.	.7984 GHZ)	_					Į.	297 35	RandW	1 355,00			į
		3/0/98										Tcold		IntTime	0.158	overall		!
Data	Description	Number Of	VHor	V Hot	1700							CHconst	ષ્ટ્ર			expected		Ī
	•	Samples	L	Std Dev	Mean	V Cold	Scale Fac	Hot	Cold	Y Fact	ক্লা	Noise Fig	Tsys	dTrec	theory	test		
							2 401	NEG I	NEGI		8	gg B	3	જ	D/Sp	NEdT	! 	ļ
Data	Description	Samples	MeanVh		MeanVc	StdDevVc	ScalFac	HNEdT	CNEdT	YFact	NPG	NEAR	Teve	1				
		8	-0.9231571		-0.63541378	0.000229700	757.9672049		÷	344003		0	699 7778068		5			Cload
i		8	-0.9232599	0.000207440	-0.63639213	-0.63639213 0.000192980		0.158	0.147	-	0.002	+	8000277777	7 2 0	0.150			79.25
		8	-0.9231564	0.000198990	-0.63663971 0.0001	0.000170230	761.2122534	0.151	+		0 044	+	707 7170402	0.1.0	10.101	1		79.25
Ī		8	-0.9231263	0.000207380	-0.63653154	0.000170870	761.0047622	0.158	+	. 1.	5 6	+	707 503 5333	0.138	0.151			79.25
Ī		100	-0.9229723	0.000205450	-0.63748460	0.000205450 -0.63748460 0.000195830	763 9559622	0.157	+	_1_	1000	2.077	102.3035332	0.138	0.151			79.25
ļ		<u>8</u>	-0.9230393	0.000214440	0.000214440 -0.63682991	0.000179340	762 0296389	0.162	+	-	170.0	+	/05.1101610	0.158	0.151	0.219	_	79.25
		8	-0.9227450		-0 63750388	0.00020560	0822719792	3 5	+	_	0.047	+	703.3832663	0.158	0.151	0.219	297.35	79.25
		8	-0 9227349	0.000216650	184577530-		766 2621236	+	=		0.068	\dashv	705.5458190	0.159	0.151	0.219		79.25
		8	-0 9226572	0 000199170	0.000199170 -0.63753731		76101.007.60	\dashv	#	_4	0.048	3.819	706.1340743	0.159	0.152	0.219		79 25
Γ		8	200326607	0.00010000	17/76/60:0-	0.000148/10	104.9142/65	\dashv	7		0.044	3.817	705.7536646	0.159	0.151	T		70.06
	5		1000	0.000201230	0.05/00/0-	0.0001/0140	/65.658802	0.154	0.130	1.446612072	0.038	3.821	706.4432709	0.159	0.152	1		79.25
	AVERAGE		-0.9229509	-0.9229509 0.000203794 -0.63698652	-0.63698652	0.000187416	2781009 637	0 166	7			-						i
					100000000000000000000000000000000000000	0.00	70701010	+	0.143	1.448935362	0.035	3.806	703.9251134	0.158	0.151	0.219	297.35	79.25
											-							
								HNEGT										
																	L	
		1.000																
T		0																
		0.800	, .															
T		0.800																
T		00700																
T		3																
T		0,600															1_	
Γ		0.200 NEQ	····												-			
Γ																		
		0.400														HINEG		1
T		0.300																Ī
		0.200	0.152	0.158		0.151 0	0.158	0.157	0 163			994						
T					_						0.143	8	0.152	~	0.154			1
T		001.0																-
Τ		0000																
Γ			-	8	.,		4	r.	9			•					<u> </u>]
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TEST DATA SHEET 12 (Sheet 1 of 3) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

. Test Setup Verified: The Baseplate Temperature (TB) 25,6°C

Compo-	Channel No.	V _b (V)	l _b (mA)	T _H (°C)	V _H	(V) Standard	T _C (°C)	V _C	Standard
nent	140.	}			Mean	Deviation		Mean	Deviation
				23.8	-1.029	0,000	-193.9	-0.710	0.0002
				23.8	-1.029	0,00031	-193.9	-0.710	0,000
				23.8	-1,029	0,0003	-193.9	-0,711	0,0002
				23.8	-1,029	0,00032	-193.9	-0,712	0.0001
LO	2	10. Q	1/6.6	23.8	-1.029	0,00031	-193.9	-0,713	0,0002
				23.8	-1.029	0.00029	-193.9	-0,713	0,0006
				23.8	-1.029	0,00028	-193.9	-0,713	0,0002
				23.8	-1.029	0,00030	-193.9	-0.714	0,000
				23.8	-1.029	0.0003	6-193.9	-0.714	0,0002
				23,8	-1,029	0.0002	7-193.9	-0.714	0,000
Mixer/	All								
Amps		10.01	84.3						

Part No.:/35644/-/	Test Engineer: Thurston
Serial No.: FO/	Quality Assurance: (85 ²) NUR 9 45
	Date: 3/7/98

TEST DATA SHEET 12 (Sheet, of 3)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2) Test Setup Verified: Baseplate Temperature (TB) 25.5°C Signature NF (dB) NPS (K) Channel Required Required No. (Max) Measured **Average** Pass/Fail (Max) Measured Average Delta Pass/Fail 2 3.55 0.09 4.20 3.80 0.08 3.80 0,09 0.08 3.81 a, 091 0,04 3.82 0.09 3.84 0,07 3.84 0.03 3.85 0.04 0.08 3.85 0.09 0.05 0,09 3.85 0.05 3.86 0.09 0.08 4,20 P 3.83 0.09 0.06 0.06 Pass = P, Fail = FTest Engineer: Thanks Part No.:_ /35(44/-/ Serial No.: FO/ Quality Assurance:_____ Date: 3/07/98

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-AZ, CH2, S/N F01, NF & NPS TEST DATA 3/7/98

, ,,,,,,,,	,					
SEO	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1 2	WARM TEST COLD TEST	296.95 79.25	-1.02885525 71010071	.000267 98 .00020873	3.80040503	.07623813
- 3 4	WARM TEST	296.95 79.25	-1.02897869 71023358	.00031355 .00023520	3.80107055	.08086814
5	WARM TEST	296.95 79.25	-1.02921730 71135092	.00028553 .00025834	3.81419655	.03628374
5 7	WARM TEST	296.95 79.25	-1.02904896 71191248	.00031965 .00018692	3.82356223	.09177226
9	WARM TEST	296.95 79.25	-1.02899225 71299467	.00030599 .00021361	3.83909995	.05656794
10	WARM TEST	296.95 79.25	-1.02917542 71290952	.00028773 .00019845	3.83615801	.02700339
12 13	COLD TEST	296.95	-1.02893985 71348541	.00028471 .00022013	3.84614360	.03920712
14 15	COLD TEST	79.25 296.95	-1.02900078 71377054	.00029763 .00019921	 3.84979963	.04521704
16 17	COLD TEST WARM TEST	79.25	-1.02887872	.00030019	3.85108843	.05279764
18 19	COLD TEST	79.25 296.95 79.25	71377848 -1.02876199 71431203	.00026691	3.85965115	.07897914
20	COLD TEST	(3.43	. , , , , , , , , , , , ,			

CH. 2 ,79.5 MHz MHz

NOISE FIGURE AVERAGE (dB) = 3.83216419373

NOISE POWER STABILITY (K) = .0594934523171

NOISE POWER STABILITY DELTA (K) = .0647688752379

NPS_MAX (K) = .0917722641514 NPS_MIN (K) = .0270033869135

INTEGRATION TIME = .158

							Cload	79.25	79.25	79.25	57.67	20.25	70.00	79.25	79.25	79.25	79.75				j			;				:			1	-				-
1										296.95	_	296.95		-		296.95	296 95				_1				<u>. </u>	<u> </u>	BHNEQT							1		_
			overall	expected	test		testNEdT	0.249	657.0	057.0	0.250	0.251	0.250	0.252	0.252	0.252	0.251				_					ļ	E									
		7.95E+07	0.158		theory dG/G		theorydG/G	0.151	0.131	151.0	0.152	0.152	0.152	0.153	0.153	0.153	0.152												0.185			5				
		BandW	IntTime		S (S		di rec	86.0	0 0	0010	0,70	0.200	0.200	0.201	0.201	0.201	0.200												ا م		•					
000	767	296.95	79.25	6.1327E-06	(K)		15ys	702 7830507	704 8802879	706 3960557	708 9079379	708.4275887	710.0423266	710.6234779	710.8433092	712.2325130	707.7816980												0.207			6				
ž	01	Thot	Tcold	CHconst	dB dB	op 3N	5	3.801	3.814	3.824	3 839	3.836	3.846	3.850	3.851	3.860	3.832												0.206			60				
				2	4B	Odia	1	0.070	0.036	0.092	0.067	0.027	0.039	0.045	0.053	0.079	0.059												0.196			7				
	***************************************			VEnat	ו נשרו	VEact	1 448887707	1.448789129	1 446848905	1 445471162	1.443197675	1.443626984	1.442172018	1.441650702	1.441453825	1.440213726	1.444231192												·	_						
				700	NEG	CNEAT		0.161	0.177	0.128	0.147	0.137	0.152		0.144	0.162	0.149		-										0.198			ø	Measurement sets			
				Hot	NEdT	HNEAT		0.214	961.0	0.219	0.211	0.198	0.196	0.206	0.207	0.185	0.202		HNEdT										0.211			4 0	Measur			
LF				Scale Fac	K/Volt	ScalFac	89		684.8789734	686.4552448	688.9293266	688.3448389	690.0717535	690.5909536	690.8912542	1110075.740	687.8441749												0.219			•				
EIVER SHELF	(CHZ) 906	(700 0115)		V Cold	Std Dev	StdDevVc	0.000208730	-0.71023358 0.000235200	0.000258340			0.000198450			0.000224610	0.000	16347												0.196			6				
GHT REC	ENCV 31 3			V Cold	Mean	MeanVc	-0.71010071	-0.71023358	-0.71135092	-0.71191248		-0.71290952	-0.71346541	-0.71377054	-0.71431203	0.011.011.00	-0.71248283 0.0002											_	_							
AMSU-A2, CH2, S/N F01, FLIGHT RECEIVER	(BPF 79.5 MHZ & LO FREOIFNCY 31 3996 CHZ)	2		V Hot	Std Dev	StdDevVh	0.000267980	0.000313550	0.000285530	0.000319650	0.000305990	-1.0291754 0.000287730	0.000284710	0.000297630	0.0000000000000000000000000000000000000	0100000	-1.0289857 0.000292987												# 17.0 			2				
, CH2, S/I	MHZ & I			V Hot	Mean	MeanVh	-1.0288563	-1.0289787		-1.0290490	-1.0289923	-1.0291754	66668701-	-1.0290078	1 0287620		1.0289857												0.183			-				
AMSU-A2	(BPF 79.5	3/7/98		Number Of	Samples	Samples	8					8 8		3 2	T	T				1.000 T	0.900	000	200	0.700	71 0600	0.500 * NEC	H 0.400	0.300	0.200	0.100	0000					
				Description		Description									1		AVERAGE																			
				Data		Data				1		1	1		1		1	1						T				Π	T			Т		Τ		Ţ

TPR 006245 Op.30

TEST DATA SHEET 15	
Tunable Short Test Data (Paragraph 3.5.5)	(A2

	Tunable Short Test Data (Paragraph 3.5.5) (A2)
Test Setup Verif	ied: Baseplate Temperature (T _B) 25, 4°C Signature
Channel No.	Measured Value
. 1	TH 24.2 °C VH - 923.1 mV Tc - 193.9 °C Vc - 635.4 mV
Voltage (mV)	921.9 921.5 921.4 921.2 921.4 929.3 929.4 929.4 929.2 929.2
Position (mil)	80 85 90 95 400 205 210 215 220 225
ΔΤ	638622 K Required Value 36.8 K max Pass/Fail P
2	TH 23.8 °C VH - 1028.8 mV Tc - 193.9 °C Vc - 7/0.1 mV
Voltage (mV)	1024.3 1024.2 1023.5 1023.2 1023.6 1038.4 1039.2 1038.3 1038.3 1037.7
Position (mil)	10 15 20 25 30 140 145 150 155 160
ΤΔ	Kack Required Value 35. 6 K max Pass/Fail P
measured return	re will be calculated for each channel based on the Pass = P, Fail = F loss of the antenna. Use the following two equations haximum required value:
Given a_i and a	as antenna return loss measurements (from polar diagram)
and 0 being the p	hase difference between $\overline{a_i}$ and $\overline{a_j}$, calculate return loss as:
$b = \left(a_i^2 + a\right)$	$a_{j}^{2}-2a_{i}a_{j}\cos\theta$
The maximum req	uired value is equal to 1.2/b.
	<↑
Part No.: <u>/3</u> Serial No.:	FO 1 Test Engineer: Tony Luna
Serial No.:	FO / Quality Assurance:
	Date:3/7/98
1	· · · · · · · · · · · · · · · · · · ·

TEST DATA SHEET 18

1 emperature Sensor and	Thermistor Test Data (Paragraph 3.6.1) (A2)
	(1 a agraph 5.0.1) (A2)

Test Setup Verified: Baseplate Temperature (T_B) <u>13.6</u> °C

Reference Designation	Specification	Measured \	/alue	Pass/Fail
RT 12	2200 ± 100 Ω	2178	Ω	P
RT 19	2200 ± 100 Ω	2177	Ω	P
RT 20	2200 ± 100 Ω	2176	Ω	P
RT 13	2200 ± 100 Ω	2177	Ω	P
RT 14	2200 ± 100 Ω	2181	Ω	P
RT 17	2200 ± 100 Ω	2183	Ω	P
TB 58	3000 ± 100 Ω	2990	Ω	P
TB 59	$3000 \pm 100 \Omega$	2987	Ω	P
TB 53	4.1 – 4.6 V	4.36	V	P

Part No.: 1356441-1	Test Engineer: Toncy Luna
Serial No.:F01	Quality Assurance: 1268 MAR 9 78
	Date: 3/5/98

TEST DATA SHEET 22 Survival Heater and Thermal Switch Test Data (Paragraph 3.6.3) (A2)

Test Setup Verified: Baseplate Temperature (T_B) 23. 7 °C

	Open Switch		Closed Switch			
Reference Designation	>10 MΩ	Pass/Fail	Specification	Measured Value	Pass/Fail	
HR1/TS1	7100 M	P		57.1	P	
71111101	7100M	P	50 - 65 Ω	57.0	P	
HR2/TS2	7100M	P		57.7	P	
ПП <i>2</i> 132	7 (00M	P		58.5	P	

Pass = P, Fail = F

Part No.: 1356441-1
Serial No.: FOI

Test Engineer: Tony Luna

Quality Assurance: (268) BAR 9 98

Date: 3/5/98

TEST DATA SHEET 23 (Sheet 3 of 3)

_	Bias	Voltage	Ventication	Test Data	ı (Paragrap)	h 3.6.4) (A2)

Test Setup Verified:	(Juno	Baseplate Temperature (T _B) 23.7 °C
	Signature	. (-5)

Reference Designation	Specification	Measured Value (V)	Pass/Fail
Mixer/IF AMP Ch 1, 2	+10 ±0.1	00,01	P
DRO Ch 1	+10 ±0.1	10.01	P
DRO Ch 2	+10 ±0.1	10.01	 P

Part No.: 1356441-1
Serial No.: FOI

Test Engineer: Tony Luna

Quality Assurance: (1A) PR 9 98

Date: 3/5/98

		. ,
)

TEST DATA

FOR

AMSU-A1-2 (P/N: 1356409-1, S/N: F01)

					ヘン
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					_

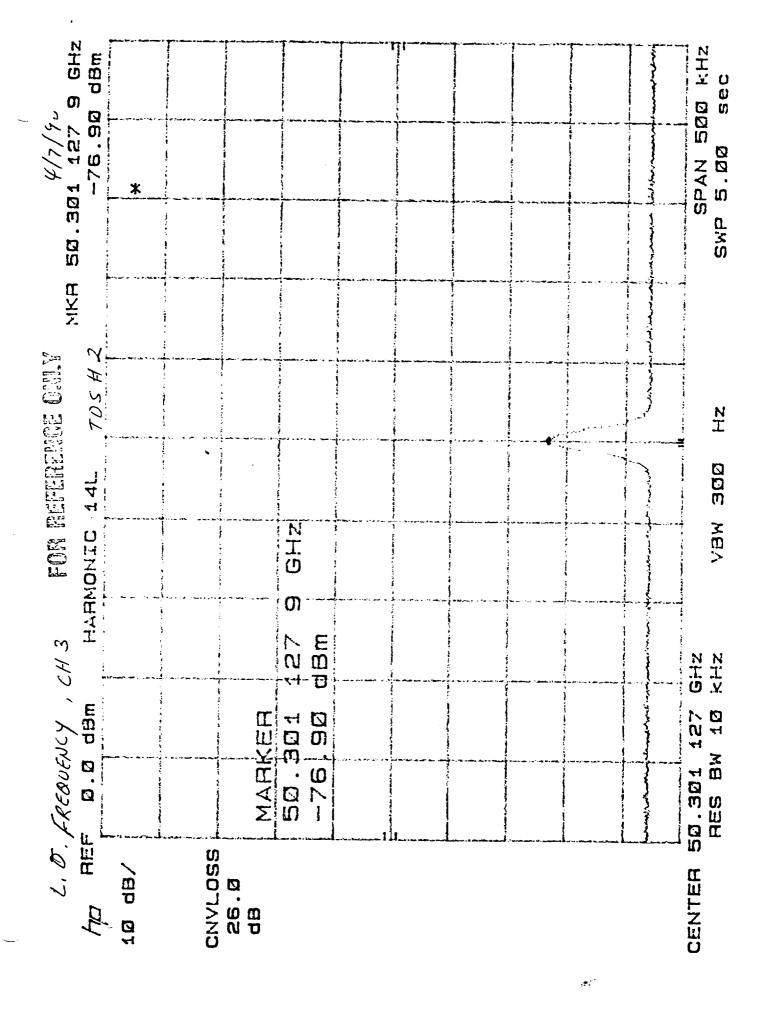
TEST DATA SHEET 2 LO Frequency Test Data (Paragraph 3.5.1) (A1-2)

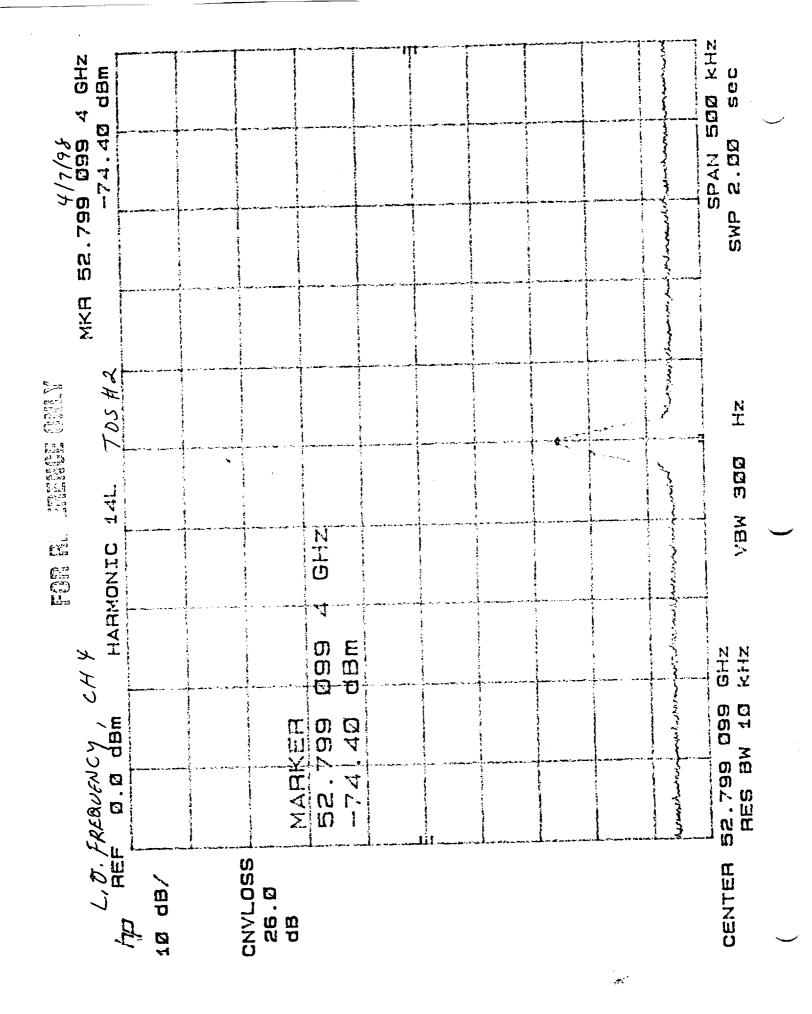
Test Setup Verified:	2. Zun	Baseplate Temperature (T _B) 27.9 °C
-	Signature	(ab) <u>F3.77</u>

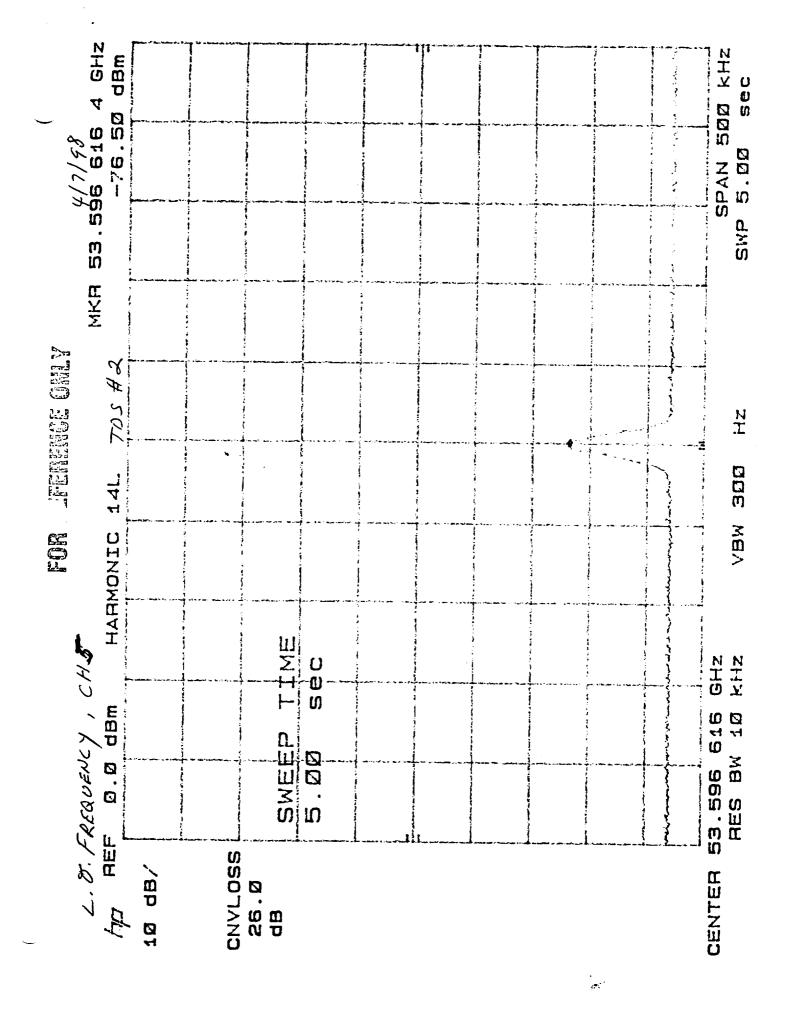
Compo-	Channel	V _b (V)	I _b (mA)		P _{dc} (mW)			f _o (GHz)			
nent	No.			Required (Max)	Measured	Pass/ Fail	Required	Measured	Pass/ Fail		
	3	9,99	192.4	2,700	1,922.1	P	50.300 ± 0.008	50.30/	P		
LO	4	10.03	198.5	2,700	1,988.9	P	52.800 ± 0.003	52.799	P		
	5	9,98	185.4	2,700	1,850.3	P	53.596 ± 0.003	53,597	P		
	8	9.98	1955	2,700	1,951.1	P	55.500 ± 0.008	102.22	P		
Mixer/ Amps	Ali	9,98	175,4	· 1,800	1,750,5						
TOTAL				12,600	<i>9,462.9</i>						

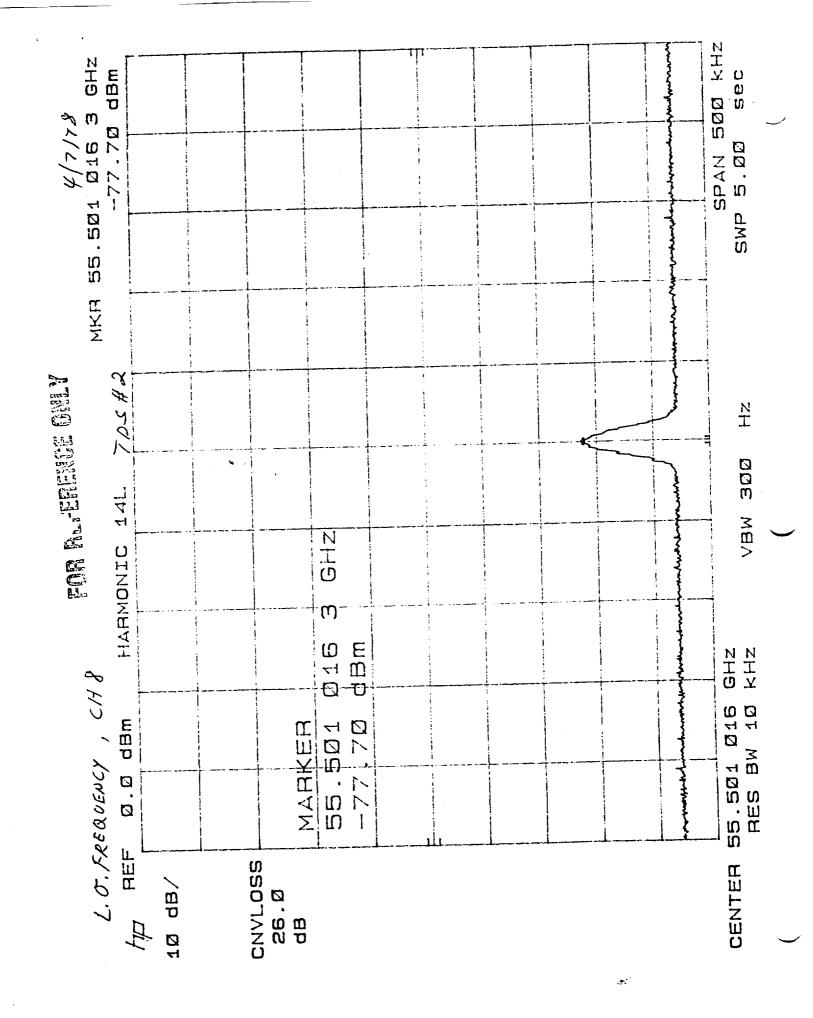
Part No.: 1356409-1	Test Engineer: The Desire
Serial No.: FO /	Quality Assurance:
	Date: 4/7/98

	,
	<u> </u>
	\rightarrow
	\sim









TEST DATA SHEET 5 IF Output Test Data (Paragraph 3.5.2) (A1-2)

Test Setup Verified:), Zung Signature	Baseplate Temperature (T_B) $28.2 \circ C$

Compo- nent	Channel V _b (V) I _b (r		I _b (mA)	P _o (dBm)	Atten (dB)	P₀(dBm)		
Hent	No.	ļ				Required	Measured	Pass/ Fail
	3	9, 99	192.4	-22,84	4.07	-27.0 ± 1.0	-26.91	P
	4	10,02	1985	-19,23	7.//	-27.0 ± 1.0	-26.34	P
LO	5	9.98	185.4	-19,16	7,12	-27.0 ± 1.0	-26.28	P
	8	9.98	195,5	-19.97	7.08	-27.0 ± 1.0	-27,05	P
Mixer/ Amps	All	9,98	175,4					

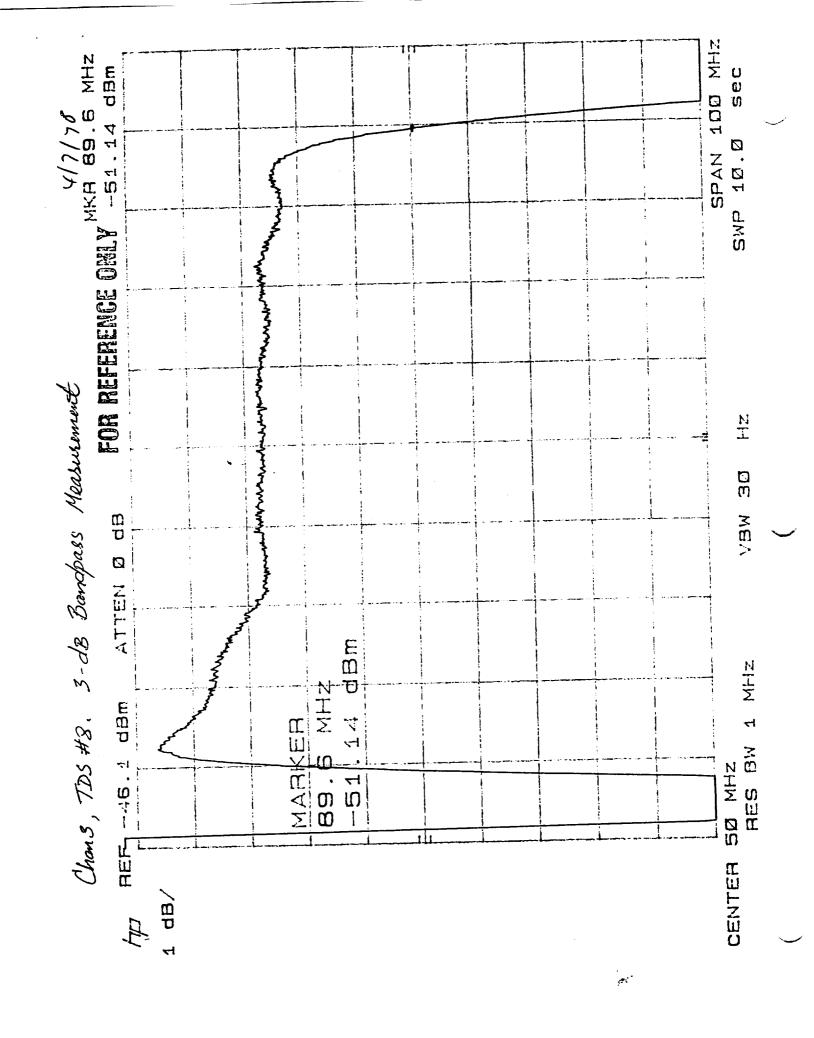
Part No.: /356409 - /	Test Engineer: The the
Serial No.:	Quality Assurance:
	Date: 4/7/98

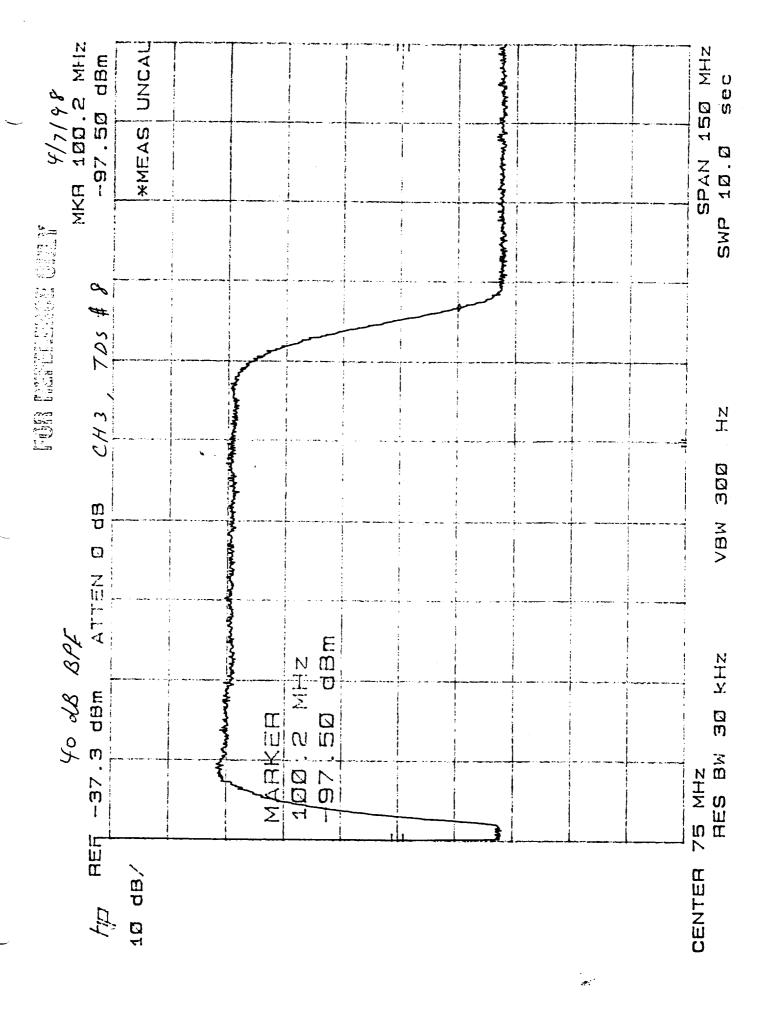
TEST DATA SHEET 8 (Sheet 1 of 2)
andnass Characteristics Test Data (Paragraph 3.5.3) (A1-2)

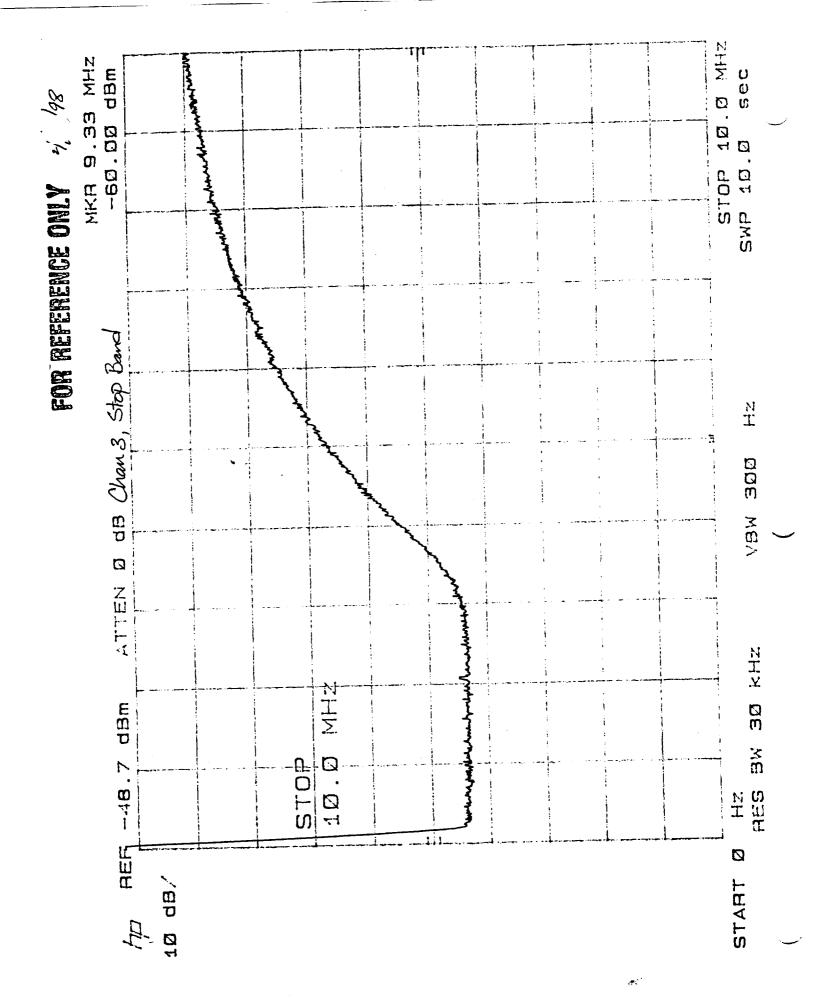
		Ba	andpass C	haracteristics Te	est Data (Paragraph	13.5.3) (A1-2)			
Test Setu	p Verified:	72	1	Baseplate Temperature (T _B) <u>28-2</u> °C					
		Si	gnature						
2	Channel	V 00	[(mA)	3 dB BW Frequency (MHz)		3 dB BW Fi (MH		Pass/ Fail	
Compo-	No.	V _b (V)	I _b (mA)	Lower	Higher	Required Max.	Measured		
hent	3	9.99	192.4		89.6	18 6 9 ()	30. 6	P	
	4	10.02	198.5	7.8	199.2	180 20 O	191.4	P	
LO	5	9.98	1854	31.6	201.2	170	169.6	P	
	8	9.98	195.5	7.6	164.8	**************************************	157.2	P	
Mixer/ Amps	All								
1	Part No.: 1356409-1 Test Engineer: 25 186								
Serial No	io.:	<u> </u>			Quality Assurance:				

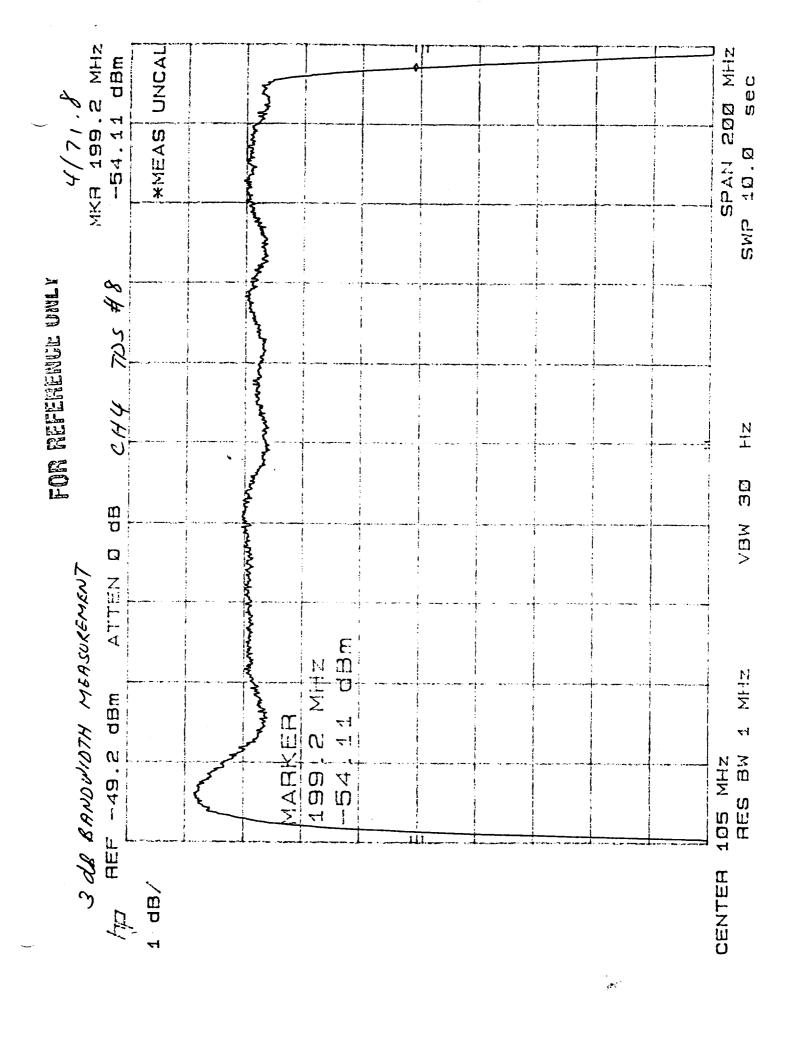
TEST DATA SHEET 8 (Sheet 2 of 2) Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-2)

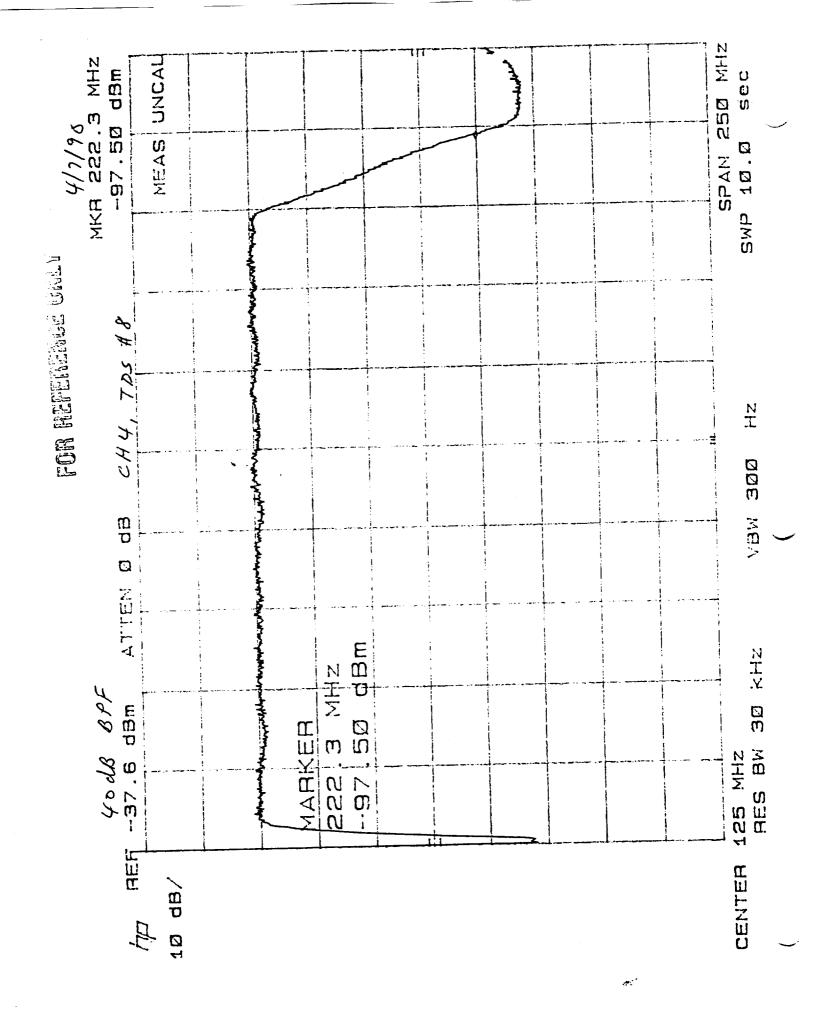
	Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-2)									
Test Set	Test Setup Verified: 7 200 Baseplate Temperature (T _B) 28,3 CQC 3/30/90 Signature									
			Ignatuze		(226) Q. Kappo					
Compo-	Channel	V _b (V)	I _b (mA)		Frequency Hz)	40 dB BW Frequency Pass (MHz) (REF.C NL) Fail				
nent	No.			Lower	Higher	Required Max.	Measured	1		
-	3	9,99	192,4	3,8	100.2 222.3 7.25	For Reprin	219.8 219.8 7.7m	PP		
	4	10.02 9.98 7.243	198,5	2,5	222.3		219.8	P		
LO	5	9.98	185.4	19.3	217,3	-221	198.0	P		
	8	9.98	195,5	2,4	181.0	429	178,6	P		
M'xer/ Amps	All	9,98	175.4							
					· . •					
Part No.: 1356409-1 Test Engineer: Therety										
Serial No.:	Serial No.: FOI				Quality Assuran		,			

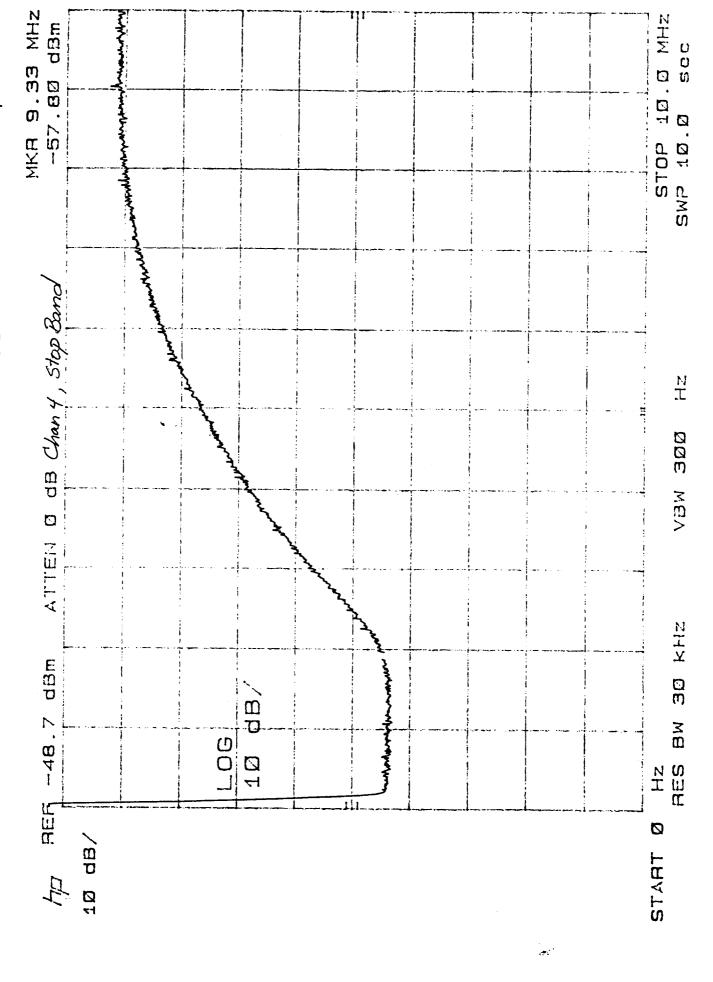


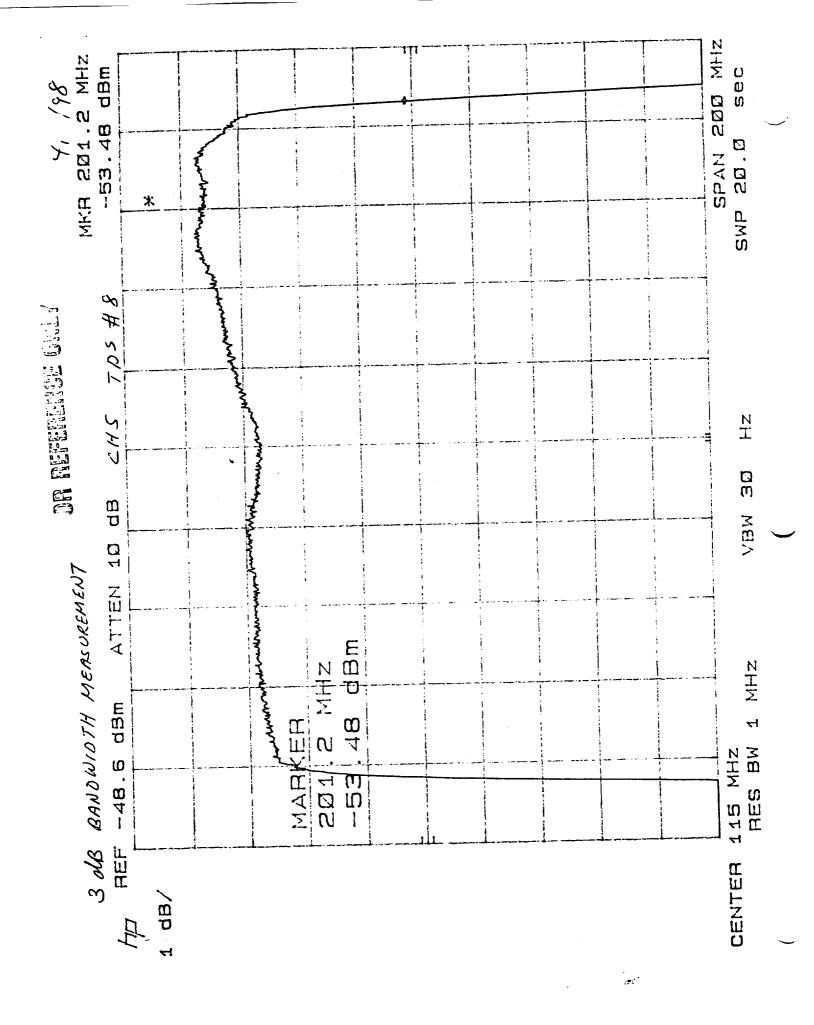


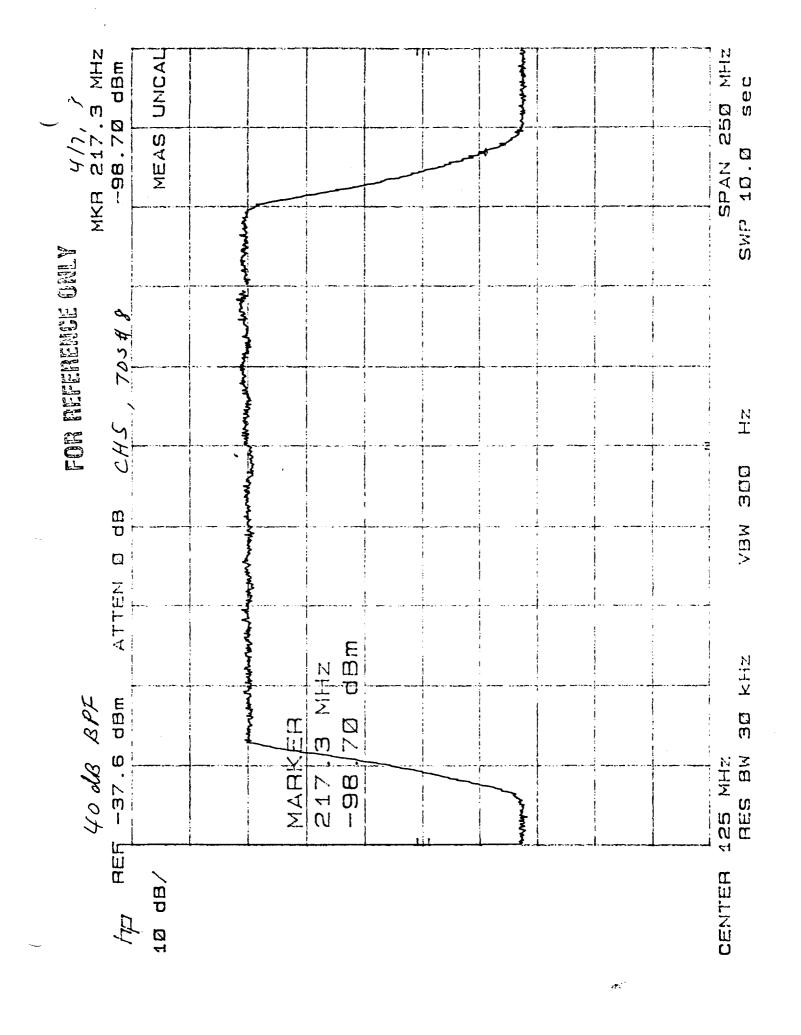


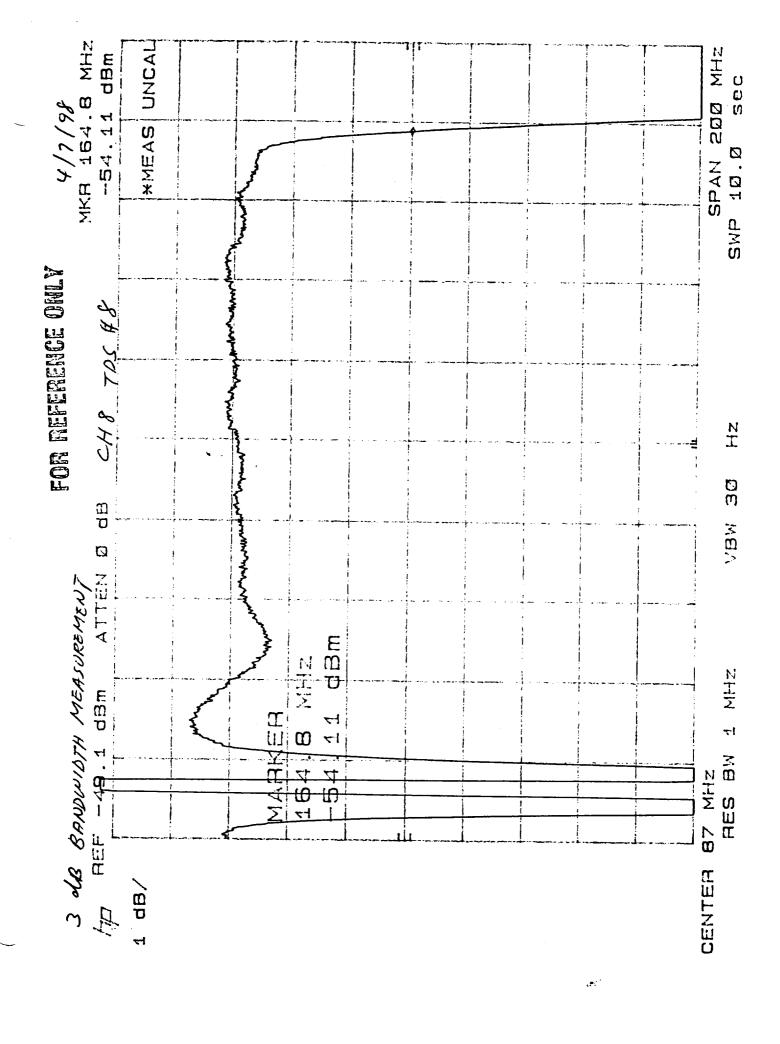


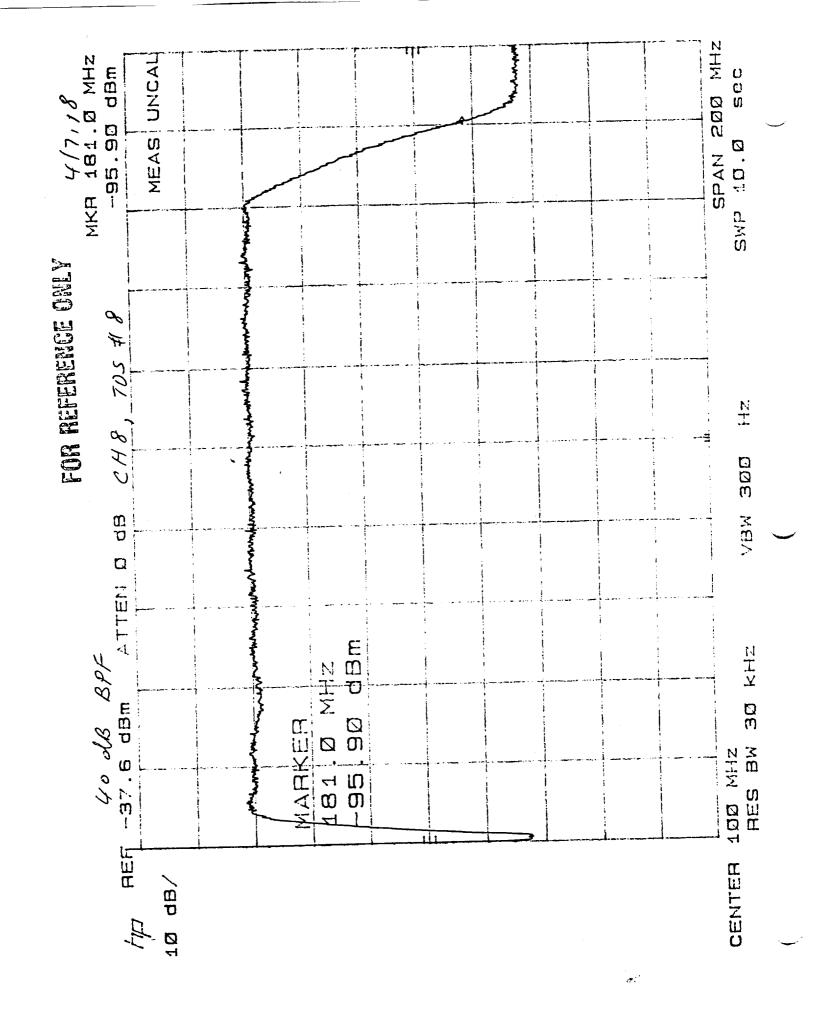


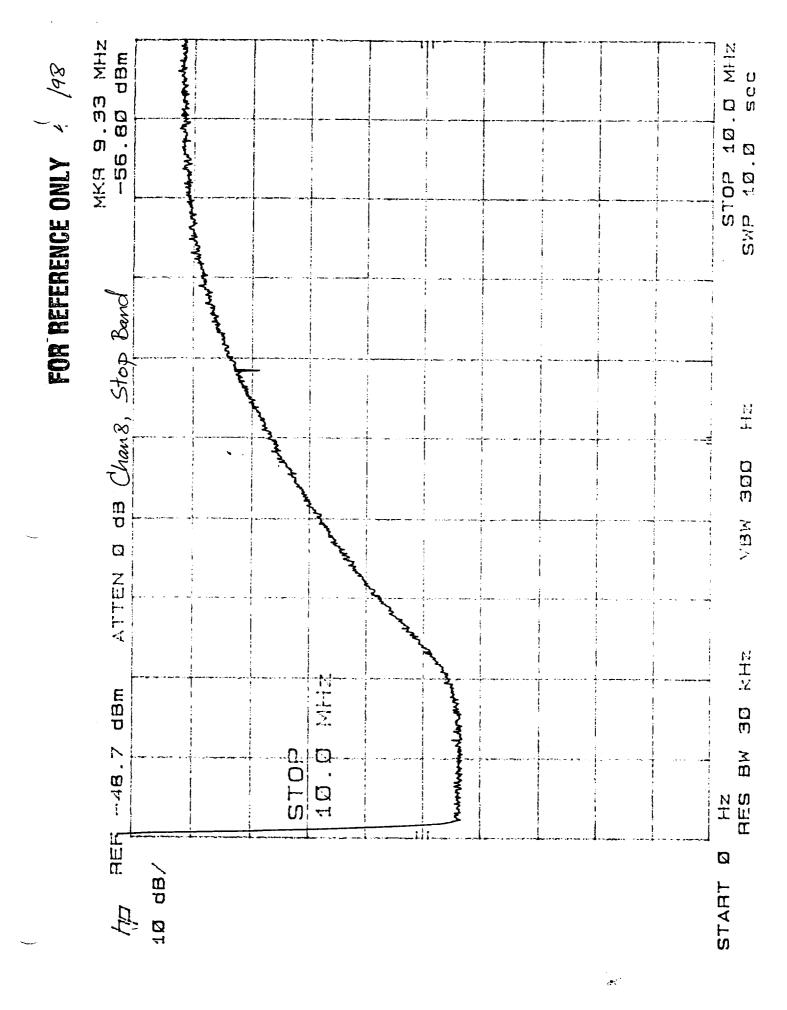












TEST DATA SHEET 10 (Sheet 1 of 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-4)

Test Setup Verified: 7 26.3 °C Signature Baseplate Temperature (T _B) 28.3 °C			1 7 7
Signature	Test Setup Verified:	7 2mg Signature	Baseplate Temperature (T _B) <u>A8,5</u> °C

Compo-	Channel	ν _ь (ν)	I _b (mA)	T _H (°C)	V _H	(V)	T _C (°C)	Vc	(V) Standard
nent	No.				Mean	Standard Deviation		Mean	Deviation
				23.0	-0,949	.00041	-194.0	-0.695	.00025
				23,0	-0.947	0,00035	-194.0	-0.693	,00024
	*	*		23.0	-0,947	0.00034	-194.0	-0.693	,00025
خ	15								
LO	Pa	£ 9,99	192.4						1
	3	1							
							X		<u> </u>
									22 70 27 AME 21
Mixer/ Amps	All	9,98	175.	4					
IF Amps	All	N/F	N/A						

NF REQUIRES TO RUN ONLY THREE TIMES FOR THIS RECEIVER SHELF (A1-2).

Part No.: 1356409-1	Test Engineer:
Serial No.:FO/	Quality Assurance:



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TEST DATA SHEET 11 (Sheet-& of 6)

		Noise Figur	e and Noise	Power Stabil	ity Test Data	a (Paragr	aph 3.5.4) (A1-2	.)	
Test Set	up Verified:), <u>)</u> Sign	ature	Basepla	te Temperatu	ire (T _B)	<u>28.3</u> °C		
		NF	(dB)				NPS (K)		
Channel No.	Flaquired (.iax)	Measured	Average	Pass/Fail	Faquired ax)	Meas	i Average	Delta	Pass/Fail
3	4.25	4.42			:3				
		4.41							
		4,43							
							The state of the s		
		\ \					inestration (
						-	Preparations		
		/ /					Henestasija		
	·								
	de	/							
	5.2		4,42	P	(1/2)				
NPS	15 NO	T REQUI	RED PE	R PROGR	AM MAN	AGER	OFFICER.	Pass = P,	Fail = F
REQ	UIRES	RECEIVE R TO RUN ONLY	THREE	E-TIME	2	, , , , ,	~ ,,,		
		6409.			Test Enginee				
Serial No.		FOL			Quality Assu	гапсе:			
					Date: 4	4/7/	98		
	·-···		 ··						

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-2, CH3, S/N F01, NF & NPS TEST DATA 4/7/98

SEO	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	298.15	94888847	.00041257		
,	COLD TEST	79.15	69470506	.00024515	4.42820024	.27103242
2	WARM TEST	296.15	94716644	.00035019		
3		79.15	69258614	.00024142	4.41342336	.19707730
4	COLD TEST		94679107	.00034530		
5	WARM TEST	296.15	69338616	.00025242	4.43194024	.19170404
5	COLD TEST	79.15		0.00000000		
7	WARM TEST	0.00	0.00000000		ଡ.ଉଉଉଉଉଉଉଉ	ଡଡଡଡଡଡଡଡ
8	COLD TEST	0.00	0.00000000	0.00000000		
9	WARM TEST	0.00	0.00000000	0.00000000		ଡ.ଜ୍ବର୍ଦ୍ଦର୍ବ୍
10	COLD TEST	0.00	0.00000000	0.00000000	ଡ.ଡଡଡଡଡଡଡ	0.0990090 0
11	WARM TEST	0.00	0.00000000	Ø.ØØØØØØØØ		
12	COLD TEST	0.00	0.00000000	0.00000000	ଡ.ଡଡଡଡଡଡଡ	ଡ.ଉଡେଉଉଉଡ
	WARM TEST	0.00	0.00000000	0.00000000		
13		0.00	0.00000000	0.00000000	0.00000000	0.00030000
14	COLD TEST		0.00000000	0.00000000		
15	WARM TEST	0.00		0.00000000	0.00000000	ଡ. ଉଚ୍ଚଡ୍ଡ୍ର୍ଡ୍
16	COLD TEST	0.00	0.00000000			
17	WARM TEST	0.00	0.00000000	0.00000000		0.00000000
18	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.0000000
19	WARM TEST	0.00	Ø.00000000	0.00000000		2.222222
20	COLD TEST	0.00	0.00000000	0.00000000	Ø.ØØØØØØØØ	ଡ.ଉଉଉଉଉଉଉ
70	5525 .25.					

CH. 3 ,78.6 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.42452863676

NOISE POWER STABILITY (K) = .219937919368

NOISE POWER STABILITY DELTA (K) = .0793283796871

 $NPS_MAX(K) = .271032417347$ $NPS_MIN(K) = .19170403766$

INTEGRATION TIME = .165

TEST DATA SHEET 10 (Sheet 1 of 10)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

					(°C) V _H (V)		T _C (°C)	V _c (V)	
nent	No.				Mean	Standard Deviation		Mean	Standard Deviation
•				23,0	-1.164	, 00023	-194.0	-0.804	.000/4
				23,0	-1.163	,00020	-194.0	-0,804	,000/
	*4 5			23.0	-1.162	,00020	-194-0	-0.804	00017
	4								
LO	\$	10,02	.00 €						
		10,00	1712						
							X		
Mixer/	All	990	175.¥						
Amps IF Amps	All	N/A	N/A						
		<u> </u>			545 E 72		C C FOR		
	EQUIRES UER SI					EIM	ES FOR		
				, -	•	•	\/ d	_	
No.:	13564	09-1			· Test En	gineer:	/hdx	2	
l No.:	FO	/			Quality	Assurance:			



TEST DATA SHEET 11 (Sheet 4'of-6)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-2)

Test Setu	p Verified:_	7. 7. Signa	3	Baseplat	e Temperatu	те (Т _в) <u>28</u>	<u>;3</u> •c			
		NF (dB)		NPS (K)					
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail	
4	4.25	3.80			0.08					
	·• .	3.80								
		3,81								
	4, 4									
		1								
	•									
	5.13		3,80	P	208					
NPS	15 N.	T REQU	IREID PO	ER (PM	10) FO	R THIS	5	Pass = P,	Fail = F	
REC	EIVER Y THRE	SHELF E TIME	(A1-0	2) AN	O NF	REQUIRE	53 /0/	(0) 0		
Ť		-6409-			Test Engine	eer:	Left	<u> </u>		
).:				Quality Ass					
					Date:	4/7/	98			
					٠.		<u> </u>			

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-2, CH4, S/N FO1, NF & NPS TEST DATA 4/7/98

SEQ	TEMP_TEST	TEST TEM 296.15	P VOLTAGE -1.16355405	STD_DEV	NF (dB)	NPS(K)
2	COLD TEST	79.15	80385109	.00022730 .00015508	3.80082493	.05543589
3 4	WARM TEST	296.15 79.15	-1.16297236 80384988	.00020471 .00017284	3.80571027	.01875957
5 6	WARM TEST	296.15 79.15	-1.16229681 80 353729	.00020491 .00016810	3.80759482	.01744914
7 8	WARM TEST	0.00	0.00000000	0.00000000		
9	COLD TEST WARM TEST	0.00 0.00	0.99099999 0.99999999	0.00000000 0.00000000	0.00000000 	©.00000000
10 11	COLD TEST	Ø.00 Ø.00	0.00000000 0.00000000	0.00000000 0.00000000	Ø. ØØØØØØØØ 	0.00000000
12 13	COLD TEST	0.00 0.00	0.00000000 0.00000000	0.00000000	ଡ.ଡଡଡଡଡଡଡ	0.00000000
14	COLD TEST	0.00	0.00000000	0.00000000 0.00000000	0.00000000	0.00000000
15 16	WARM TEST	0.00 0.00	0.00000000 0.00000000	0.00000000 0.00000000	0.00000000	0.00000000
17 18	WARM TEST COLD TEST	0.00 0.00	0.00000000 0.000000000	0.90000000 0.90900000	0.00000000	 0.00000000
19 20	WARM TEST	0.00	0.00000000	0.00000000		
20	COLD TEST	• .0.00	0.00000000	0.00000000	0.00000000	ଡ.ଡଡଡଡଡଡଡ

CH. 4 ,191.2 MHz MHz

NOISE FIGURE AVERAGE (dB) = 3.804710945

NOISE POWER STABILITY (K) = .0308818990823

NOISE POWER STABILITY DELTA (K) = .0389877466588

 $NPS_MAX_{(K)} = .0564368880512$ $NPS_MIN_{(K)} = .0174491413924$

INTEGRATION TIME = .165

TEST DATA SHEET 10 (Sheet-1 of 10)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1) 2

Test Setup Verified:	7, 2mg Signature	Baseplate Temperature (T _B) 38,3	°C
			

Compo-	Channel	V _b (V)	l _b (mA)	T _H (°C)	V _H	(V)	T _C (°C)	Vc	(V)
nent	No.				Mean	Standard Deviation		Mean	Standard Deviation
				23,0	-1.192	,00025	-194.0	-0.865	,00020
				23,0	-1.192	.00023	-194.0	-0.864	,00026
	*			23,0	-1.191	. 00023	-194,0	-0.864	.00027
LO	15								
	*5 \$6.	9,98 18	.9016						
			1,82,4						
				·					
Mixer/ Amps	All	9,98	175,4						
IF Amps	All	NA	N/A						

NF REQUIRES TO RUN ONLY THREE TIMES FOR THIS RECEIVER SHELF (A1-2),

Part No.: 1356409-1	Test Engineer:
Serial No.: Fo /	Quality Assurance:
	Date: 4/7/98



TEST DATA SHEET 11 (Sheet-8 of 8) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-2)

Test Setu	Test Setup Verified: 7, 100 Baseplate Temperature (T _B) 28.3 °C Signature										
		NF ((dB)		NPS (K)						
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail		
5	425	4,32			Hans						
		4.32									
		4.33									
		$\cdot \setminus /$									
		$\bigcup_{i=1}^{N}$									
	54_										
	5.2		4.32	P	.08						
NPS	15 NOT	REQUIR	ED PE	R (PM	o) FOX	THIS	· - · · ·	Pass = P,	Fail = F		
	EIVER S Y THR		(A1-2)	AND	NFR	EQUIRES	TORU	N V			
						eer:	V I	1			
Part No.:		<u>407-</u> 5/	/			·	M	<u> </u>			
Serial No	·:				Quality Assurance: Date: 4/7/98						
	···			•							

FOR REFERENCE ONLY

AMSU-A TEST

INTEGRATION TIME = .165

AMSU-A1-2, CHS, S/N FO1, NF & NPS TEST DATA 4	./7/98	
SEQ TEMP_TEST TEST TEMP VOLTAGE STD_DEV	NF (dB)	NPS(K)
1 WARM TEST 296.15 -1.19228008 .00024833	4.31997157	.06947215
3 WARM TEST 296.15 -1.19177576 .00022671	4.31735393	.01677624
5 WARM TEST 296.15 -1.19073567 .00022783	4.32805357	.02341029
7 WARM TEST 0.00 0.00000000 0.00000000	©.00000000	o.00000000
9 WARM TEST 0.00 0.00000000 0.00000000	0.00000000	0.00000000
11 WARM TEST 0.00 0.00000000 0.000000000	0.00 000 000	0.00000000
13 WARM TEST 0.00 0.00000000 0.000000000 14 COLD TEST 0.00 0.00000000 0.00000000	୦.ଉଉତ୍ଭଦ୍ଦ୍ର	0.00000000
15 WARM TEST 0.00 0.00000000 0.000000000 16 COLD TEST 0.00 0.00000000 0.00000000	0.00 00 0000	Ø.00000000
17 WARM TEST 0.00 0.00000000 0.00000000	0.00000000	0.00000000
19 WARM TEST 0.00 0.00000000 0.00000000 20 COLD TEST 0.00 0.00000000 0.00000000	ଡ . ପ୍ର ଉପ୍ରସ ପ୍ର	Ø.00000000
CH. 5 ,169.6 MHz MHz NOISE FIGURE AVERAGE (dB) = 4.32179544445		
NOTSE TOOKE WELVER		
NOISE POWER STABILITY (K) = $.0365528959143$		
NOISE POWER STABILITY DELTA (K) = .0526959	3163006	
NPS_MAX (K) = .0694721549406 NPS_M	IN (K) = .018	677623864

٠.

TEST DATA SHEET 10 (Sheet 2 of 10)

st Setup V	erified:	Signat	ure	Base	plate Temp	erature (T _B)	<u> </u>	C	
Compo- nent	Channel No.	V _b (V)	i _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standa Deviati
				23,0	982	,0002/	-194.0	691	, 00 %.
				23,0	982	. 00018	-194.0	692	.000
	*			23.0	-,983	,00022	-194.0	692	,000
	7878								
LO	1 22	9,98	1955						
							\times		
Mixer/ Amps	All	9,98	175,4						
IF Amps	All	N/A	<i>۱</i> /۱۹						
	QUIRES VER SI				THRE	5 TIME	S FOR	THIS	
No.: <u>/</u> /	135640	9-1			· Test En	gineer:	The	1	
al No.:	FO	1			Quality	Assurance:			
					Date:	4/7	198	· · · · · · · · · · · · · · · · · · ·	

TEST DATA SHEET 11 (Sheet 6 of 6)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-2)

Test Sett	ip Verified:_	7. 7. Signa	ature	Baseplat	e Temperatu	re (T _B) <u>28</u>	<u>.3</u> ℃		
		NF ((dB)			· · · · · · · · · · · · · · · · · · ·	NPS (K)		
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
8 (4.25	4,00			0.08				
`		4.00							
		3,99							
	1	7							
		H /							
		$\vdash\bigvee$							
		<u> </u>							
		 / \							
		1							
		/			G	·			
	513		4,00	P	408		P. Garage		
NPS	15 NO	T REQU	IRED P	PEK (A	Mo)	FOR T	415	Pass = P,	Fail = F
REC	EIVER S	HELF	(A1-2)) ANI)	NFK	REQUIRE	S 70		
RUN	ONLY	THREE	- 1114E :	3 ,		~	7/ %	/_	
Part No.	:/:	35(40)	9-1		Test Engir	neer:	This	<u>k</u>	
Serial N	o.:	FOI		 	Quality As	ssurance:			
					Date:	4/7/	98		
									

AMSU-A TEST

AMSU-A1-2, CH8, S/N F01, NF & NPS TEST DATA 4/7/98

SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.15	98177514	.00020652		
2	COLD TEST	79.15	69144306	.00023293	3.99523560	.05436992
3	WARM TEST	296.15	98178351	.00017980		
4	COLD TEST	79.15	69203968	.00027044	4.00415525	.05334157
5	WARM TEST	296.15	98277137	.00022187		
6	COLD TEST	79.15	69201334	.00023117	3.99325676	.08090377
7	WARM TEST	0.00	0.00000000	ଡ . ଉପ୍ରତ୍ତ୍ର୍ମ		
8	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM TEST	0.00	0.00000000	ପ. ଅପ୍ରପ୍ରପ୍ରଥ		
10	COLD TEST	. 0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM TEST	0.00	0.00000000	ଡ.ଡଚ୍ଚ୍ଚ୍ଚ୍ଚ		
14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM TEST	0.00	0.00000000	ଡ.ହଡଡଡଡଡଡ		
15	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000		
18	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM TEST	0.00	0.00000000	0.2222020		
20	COLD TEST	0.00	0.00000000	0.99999999	0.00000000	0.00000000

CH. 8 ,156.2 MHz MHz

NOISE FIGURE AVERAGE (dB) = 3.99755179373

NOISE POWER STABILITY (K) = .0628717556138

NOISE POWER STABILITY DELTA (K) = .0275622014672

 $NPS_MAX (K) = .0809037731728 NPS_MIN (K) = .0533415717056$

INTEGRATION TIME = .165

TEST DATA SHEET 17 Temperature Sensor and Thermistor Test Data (Paragraph 3.6.1) (A1-2)

Test Setup Verified: 7. Yrub Signature	Baseplate Temperature (T _B) <u>26.0</u> °C
--	--

•	*			
Reference Designation	Specification	Measured Va	alue -	Pass/Fail
RT 41	2200 ± 100 Ω	2173	Ω	Pass
, RT 42	2200 ± 100 Ω	2173	Ω	Pass
RT-43	2200 ± 100 Ω	2176	Ω	Pass
RT 44	2200 ± 100 Ω	2171	Ω	Pass
RT 12	2200 ± 100 Ω	2170	Ω	Pass
RT 17	2200 ± 100 Ω	2171	Ω	Pass
RT 18	2200 ± 100 Ω	2176	Ω	Pass
RT 19	2200 ± 100 Ω	2/73	Ω	Pass
RT 22	2200 ± 100 Ω	2172	Ω	Pass
RT 33	2200 ± 100 Ω	2174	Ω	Pass
TB 58	3000 ± 100 Ω	2994	Ω	Pass
TB 59	3000 ± 100 Ω	2998	Ω	Pass
TB 54	4.1 – 4.6 V	4.35	V	Pals

Pass = P, Fail = F

Part No.: 1356409-1	Test Engineer: Sinh
Serial No.: Fol	Quality Assurance:
•	Date: 04/8/98

N.R 30 98 50 000 R - Kapper

TEST DATA SHEET 21 Survival Heater and Thermal Switch Test Data (Paragraph 3.6.3) (A1-2)

Test Setup Verified: Signature	Baseplate Temperature (T _B) <u>26.0</u> °C	•
8		

:	Open Switch		Closed Switch		
Reference Designation	>10 MΩ	Pass/Fail	Specification	Measured Value	Pass/Fail
HR1/TS1	> 100M2	Pass		4452	Pars
	> 100 HQ	Pars	40 - 48 Ω	44.42	Pass
HR2/TS2	>100MQ	Pass		43.5 52	Pars
	7100HQ	Pass		43.5.5	Pass

Pass = P, Fail = F

Part No.: 1356409-1	Test Engineer: J. Vrink
Serial No.: Fo/	Quality Assurance:
-	Date: 04/8/98

A42 00 78 Kappay

TEST DATA SHEET 23 (Sheet 2 of 3) Bias Voltage Verification Test Data (Paragraph 3.6.4) (A1-2)

Test Setup Verified:_	Signature	Baseplate Temperature (T _B) <u>24</u>	_°C
	0.500	•	

Reference Designation	Specification	Measured Value (V)	Pass/Fail
Mixer/IF AMP Ch 3, 4, 5, 8	+10 ±0.1	10.01	Pass
DRO Ch 5	+10 ±0.1	9.97	Pass
DRO Ch 4	+10 ±0.1	10.01	Pass
DRO Ch 3	+10 ±0.1	9.99	Pass
DRO Ch 8	+10 ±0.1	9.97	Pau

Part No.: 1356409-1	Test Engineer: 2 Irul.
Serial No.: FO/	Quality Assurance:
	Date: 04/8/98

MR 30 73 57 (88) R. Kapper

TEST DATA

FOR

AMSU-A1-1 (P/N: 1356429-1, S/N: F01)

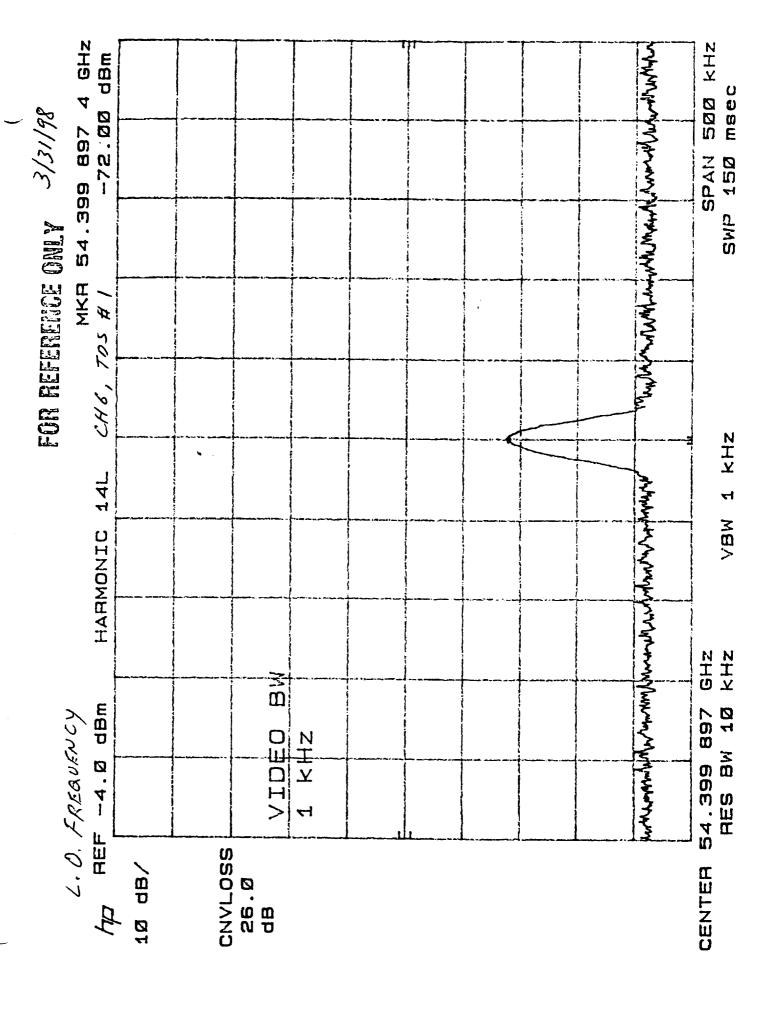
		_

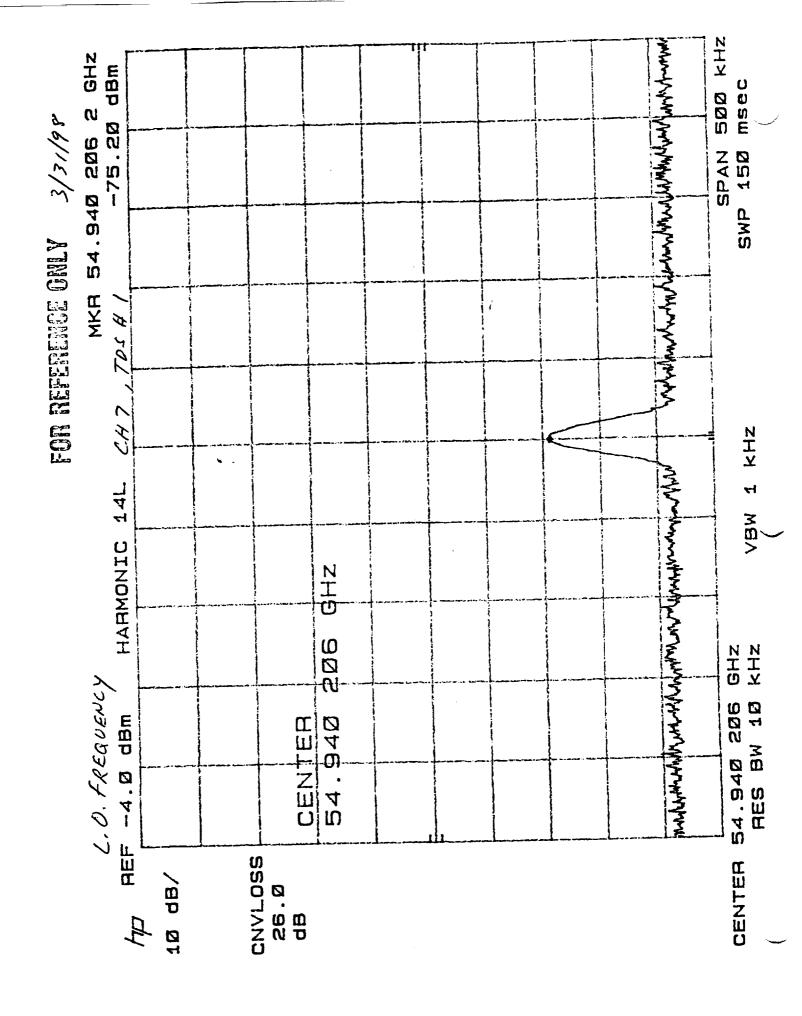
AE-26002/6A 15 Sep 97

TEST DATA SHEET 1
LO Frequency Test Data (Paragraph 3 5 1) (A 1

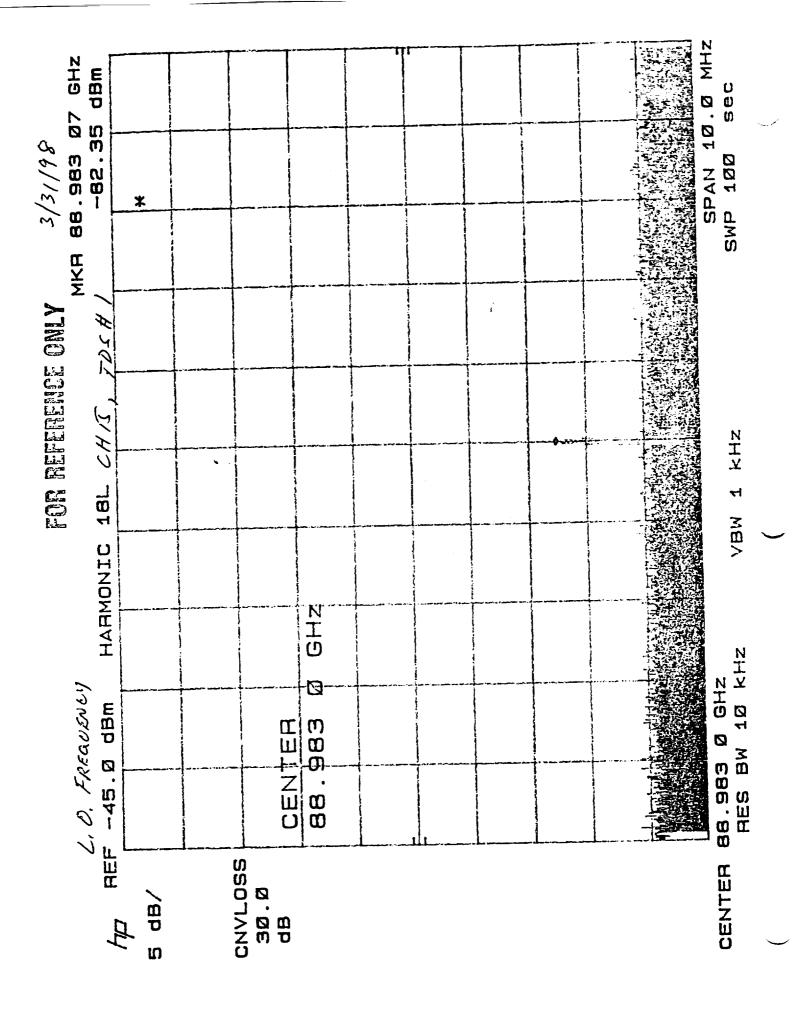
			\rightarrow r_{c}) Frequen	icy Test Data	a (Paragraph 3	3.5.1) (A	.1-1)		
Test Setup	Verif	ied:	Signatur	10-		te Temperatu				
Compo-	1. • (Channel	V _b (V)	I _b (mA)		P _{dc} (mW)		T t.	o(GHz)	
nent		No.			Required (Max)	Measured	Pass/ Fall	Required	Measured	Pass/ Fail
		6	9.97	179,8		-192.6		54.400 ± 0.003		P
		7	9,94			15-31. K		54.940 ± 0.003	 	P
		9	Posi-		9,000	/				
		10	tive	1	(13,500)*			1		
	LO	11	1 . ,	1			(!	57.290344		
	No.	12	Nega-		1,500			± 0.000150	 	
LO	1	13	tive			1 1	1 1	086		
	-	14	1 1	1	1	1 1	1 1		 	 !
Į		9	Posi-		9,000			i 	57. 290325	P
	1	10	tive		(13,500)*		P	}	N/A	_'
!	ro	11	15.13	514.8	1	7789	r	57.290344		-
. 1	No.	12	Nega-	-	1,500	 		± 0.000150	N/A	
!	2	13	tive	1.	i l	lair	7	886	N/A	
!		14	15.13	63.8	, ,	965	P		N/A	
		15	1.4.89	180.2	3500	<i>च ६ ⊕</i> त्र. च	- p		N/A 68.963	P
Mixer/ Amps	_	All		242.1	2 550	14ct.5		± 0.080		
IF Amps		All	2.95	384		30/m.8				
				Primary (LO#1):	24,510					
T ,	~~^1	1			(29,010)*					
	OTAL		Heau	indancy. (LO#2)	24,510 (29,010)*	1966c S				
* Indicates	require	ed values fo	or the PLC		d in AE-2666		i Jahren Barrer	Par	- F:	L. C.
		ock Detect		. .	7 00 r see 2000 ;		O 2 Lock	Pas CDetect	ss = P, Fai	= r
art No.:	<u>/35</u>	-642°	9-1		7	Test Engineer;		Litter		
erial No.:		FO1		···		Quality Assura	7			
						Date: 3		'98		
•										

			~
•			





	SM HARMONIAC AAN. GARANA AAN. GA GARANA AAN. GA GARANA AAN. GA GARANA AAN. GA GARANA AAN. GA GARANA AAN. GA GARANA AAN.	MEAS UNCAL		0.000			anderstanding and the second s	
(110 (120 -11-1)	HEF D.B dBm		CMVLOSS	 57.290				The second secon



TEST DATA SHEET 4

LI	Output Power	r Test Data (Paragrapi	n 3.5.2) (A1-1)
() 1	1110		

Test Setup Verified: Baseplate Temperature (T_B) 28.7 °C

Compo-	Channel No.		Channel		Channel		Channel		V _b (V)	l _b (mA)	P _o (dBm)	Atten (dB)	P	o(dBm)	
nent						<u>-</u>	Required	Measured	Pass/ Fail						
		6	9.97	180	-18.28	9	-27.0 ± 1.0	-27.14	P						
<u>.</u> !		7	9.94	194	-19.02	8	-27.0 ± 1.0	-26.94	P						
		9 ·	Posi-		N/A	n/a	-27.0 ± 1.0								
		10	tive		N/A	n/a	-27.0 ± 1.0								
	LO	11			n/a	n/a	-27.0 ± 1.0								
	No.	12	Nega-		n/a	n/a	-27.0 ± 1.0								
LO	1	13	tive		n/a	N/a	-27.0 ± 1.0								
		14			n/a	n/a	-27.0 ± 1.0								
	9		Posi-				-27.0 ± 1.0	-27.44	9						
		10	tive		YA DOZ	第2章	-27.0 ± 1.0	-26.94	P						
	LO	11	15.13	514.6			-27.0 ± 1.0	-27. iB	P						
	No.	12	Nega-		新发现了	BEE 18	-27.0 ± 1.0	-26.67	P						
	2	13	tive	63.8	建筑	三	-27.0 ± 1.0	-27.47	P						
		14	15.13	67.0	建功能		-27.0 ± 1.0	-26.67	P						
		15	14.9	180	tues 3/3/35	2	-27.0 ± 1.0	-26.73	P						
Mixer/ Amps		All	9,96	40.4											
IF Amps		All	7.95	263.6											

Pass = P, Fail = F

Part No.: 1356429 - 1	Test Engineer:
Serial No.: FO /	Quality Assurance:
·	Date: 3/11/98

AE-26002/6A 15 Sep 97

TEST DATA SHEET 7 (Sheet 1 of 2)

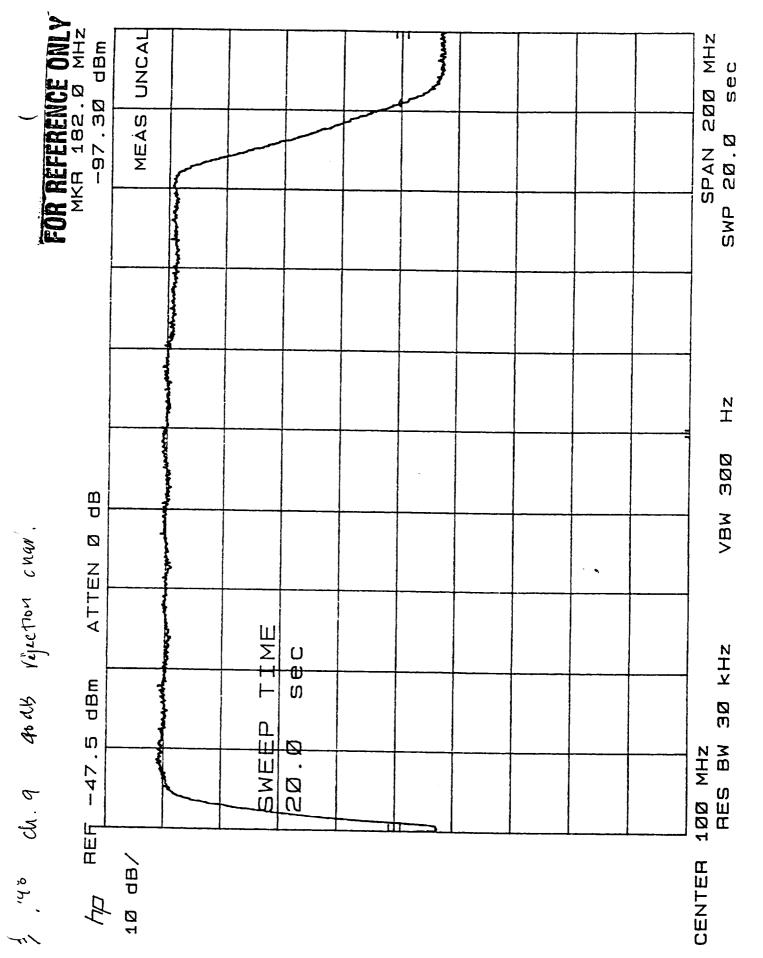
Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-1)

Component		Channel No.	√ _b (V)	l _b (mA)	3 dB BW Frequency (MHz)		3 dB BW F (Mi	Pass/Fail	
<u>.</u>					Lower	Higher	Required MAX	Measured	
LO		6					\$90 20C		
		7					490 200		
ĺ	LO	9	Positive				330 165		
	No.	10					78		
	1	11					36 36 36 36		
		12	Negative				16 16		
		13					8 8		
		14				·	3 3		
:	LO	9	Positive	n/a	8.1	164.7	330 165		P
	No.	10	15,13	514.8	179.2	255.6	78	76.4	P
	2 ₹	11	12,12	n/a	256,7 352.4	386.4	96 3C	34.5	P
		12	Negative	n/a	336.8	351.8	16 16	15.6	P
		13	15.13	63.8	326.15	335.90	80	7.75	P
		14	12.12	n/a	325,32	328,24		2,92	<u> </u>
		15			493	1485	5000 lcc	992	P
Mixer/A	mps	All							
1F Am	ps	All	1000						

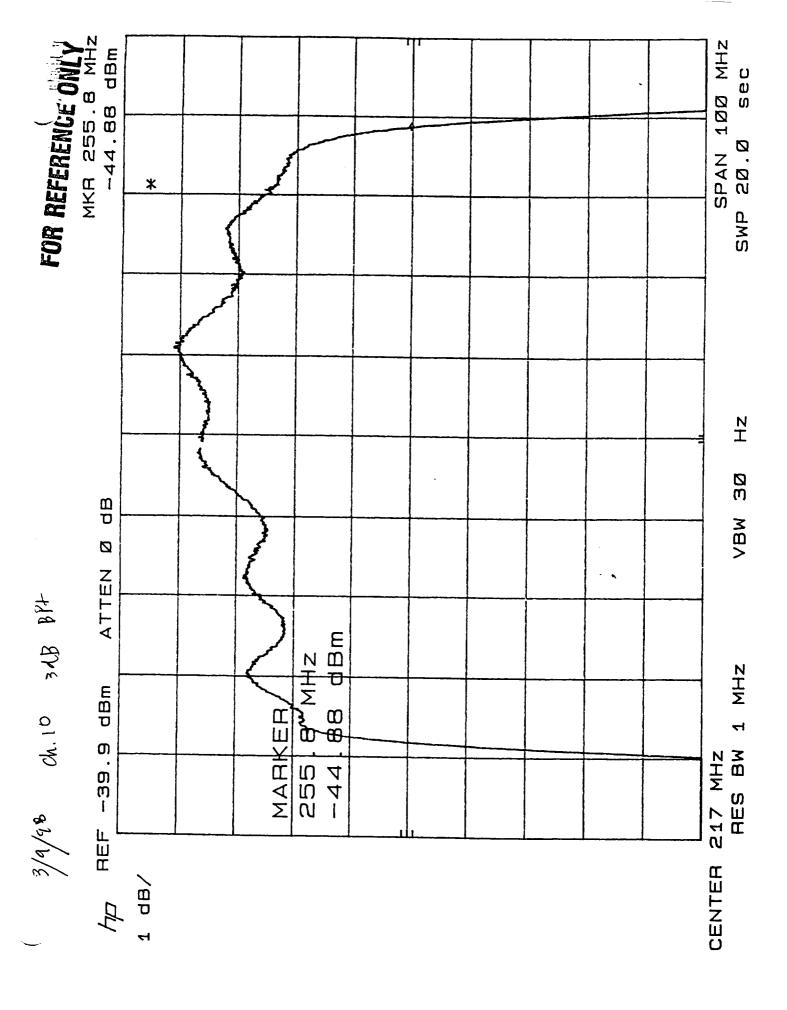
Part No.: 1356429-1	Test Engineer:
Serial No.: FC /	Quality Assurance:
	Date: 3/31/98

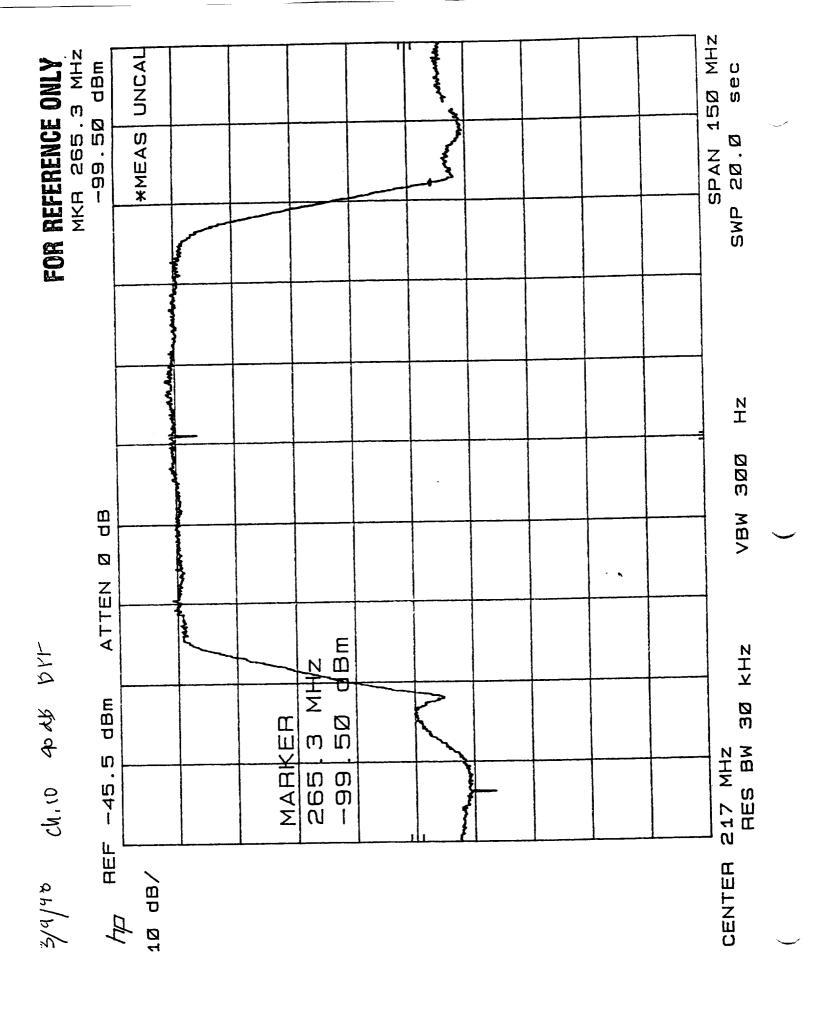
TEST DATA SHEET 7 (Sheet 2 of 2) Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-1)

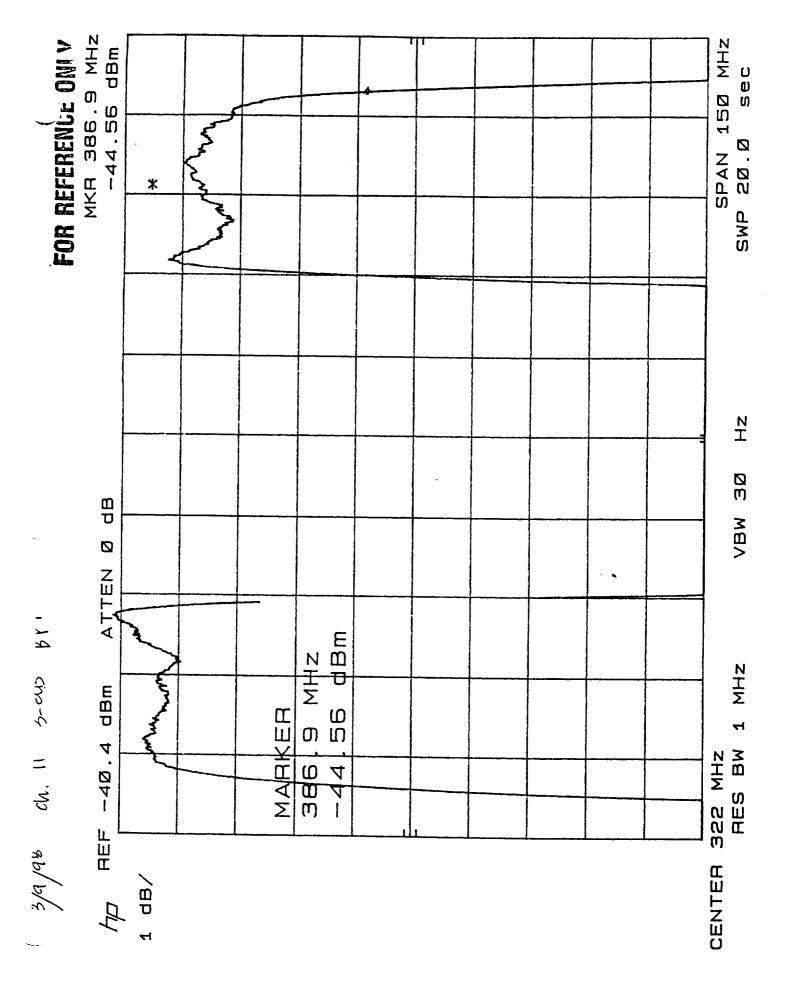
	Test Setup	Verified:_		huic—	Bas	seplate Temp	perature (T _B)	<u>27.7</u> °C		
	Component		Channel No.	V _b (V)	I _b (mA)				Frequency Hz)	Pass/Fail
						Lower	Higher	Required MAX (Ref Only)	Measured	
П	LO		6					520		
П			7					520		
$\ \ $		ro	, 9	Positive				429		
		No.	10					101		
		1	11				-	47		
			12	Negative				21		1:
			13					10		
11		*	14					4		
Ш	,	LO	9	Positive	u/a	2:2	182.0	429	179.8	P
		No.	10	17.12	514,8	170.5	265.3	101	94.8	P
		2	11	15.13	n/a			47		
			12	Negative	na			21		
Ш			13	15.13	63.8			10		
			14	12.12	n/a		,	4		
١L			15	-		1/9	n/a	7800		1
ΙL	Mixer/Ar	nps	All							
	IF Amp	os	All							
			· · · · · · · · ·					~ / *		
Pa	art No.:	1350	427-	· <i>J</i>		Test En	gineer:	MR	Xy_	
Se	erial No.:	F	0/				Assurance:_	· 		-
			-				3/1/	198		

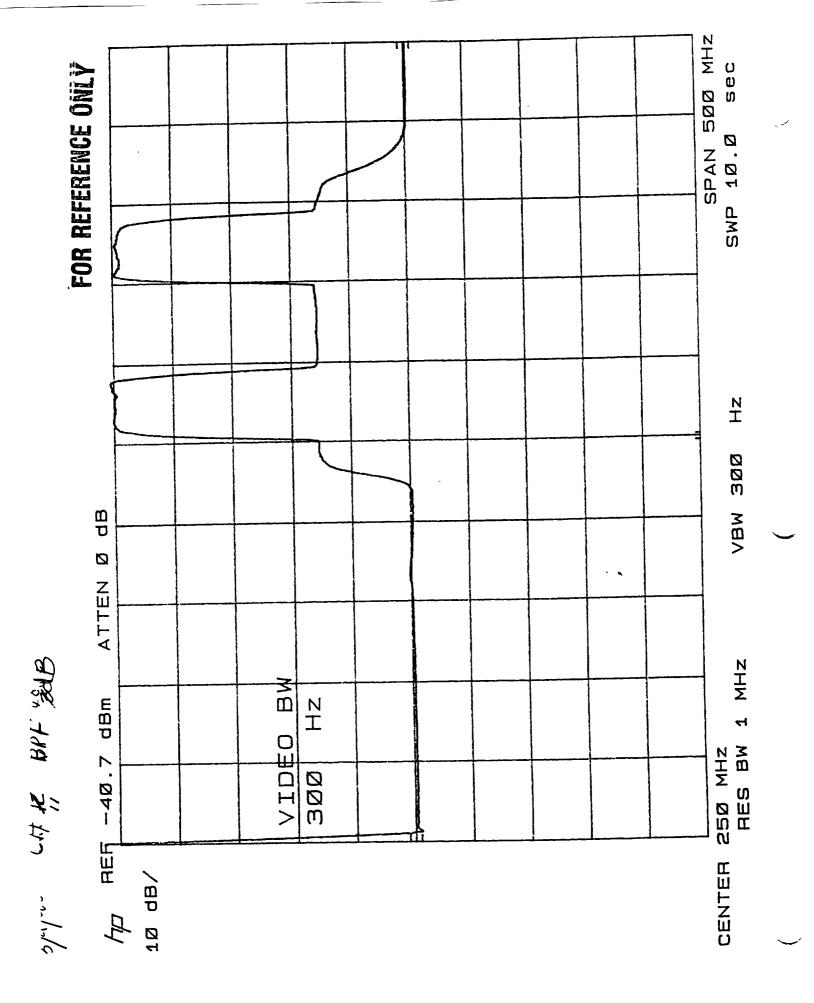


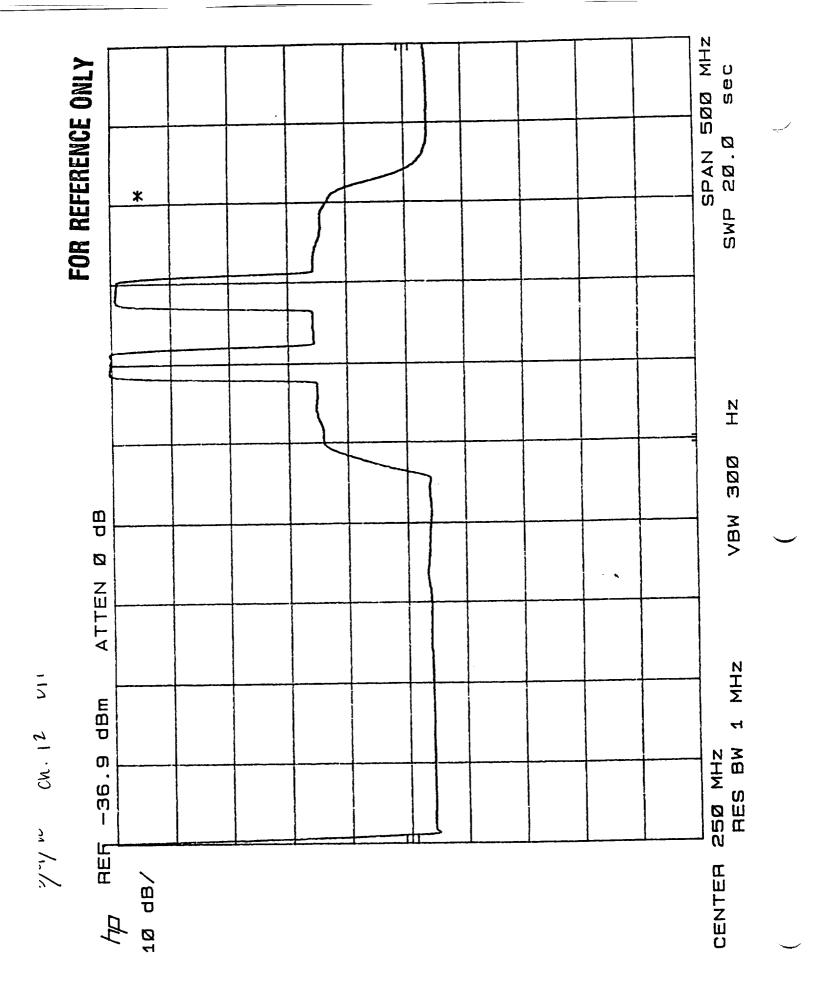
libror additionable eve

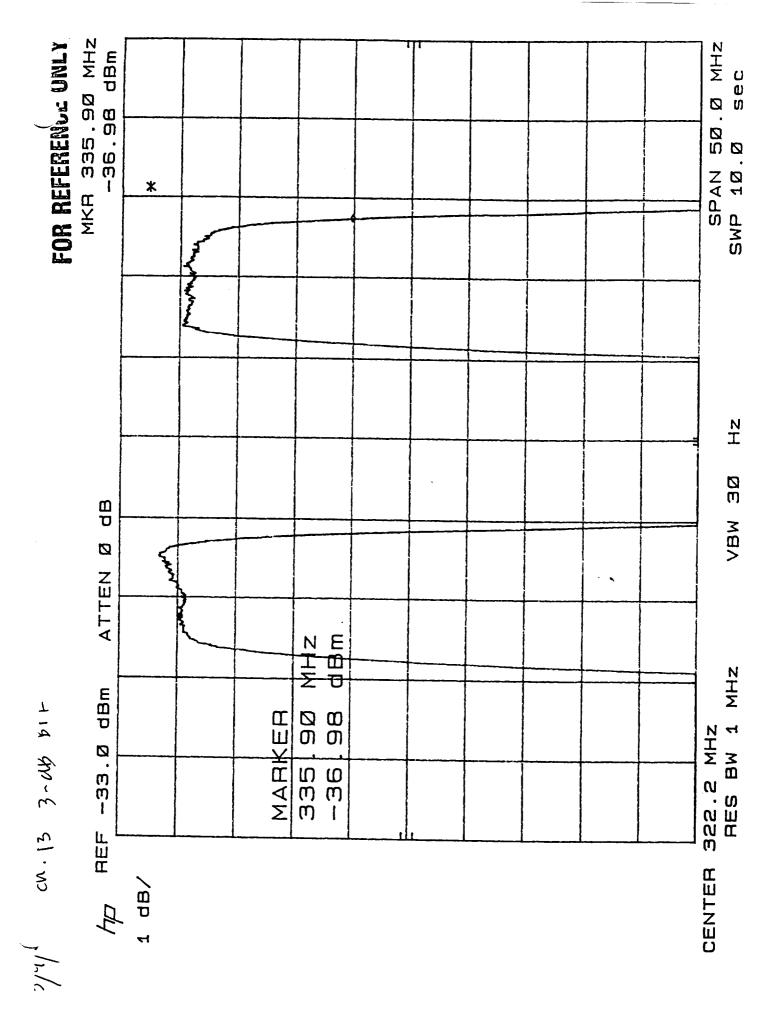


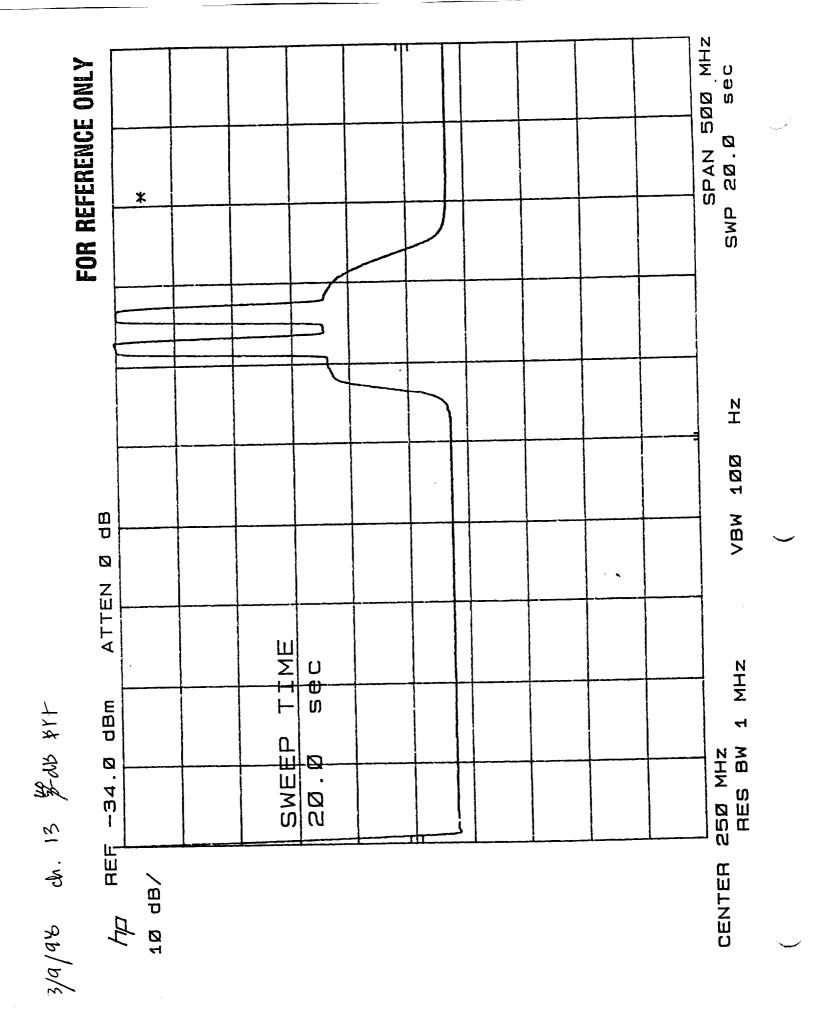


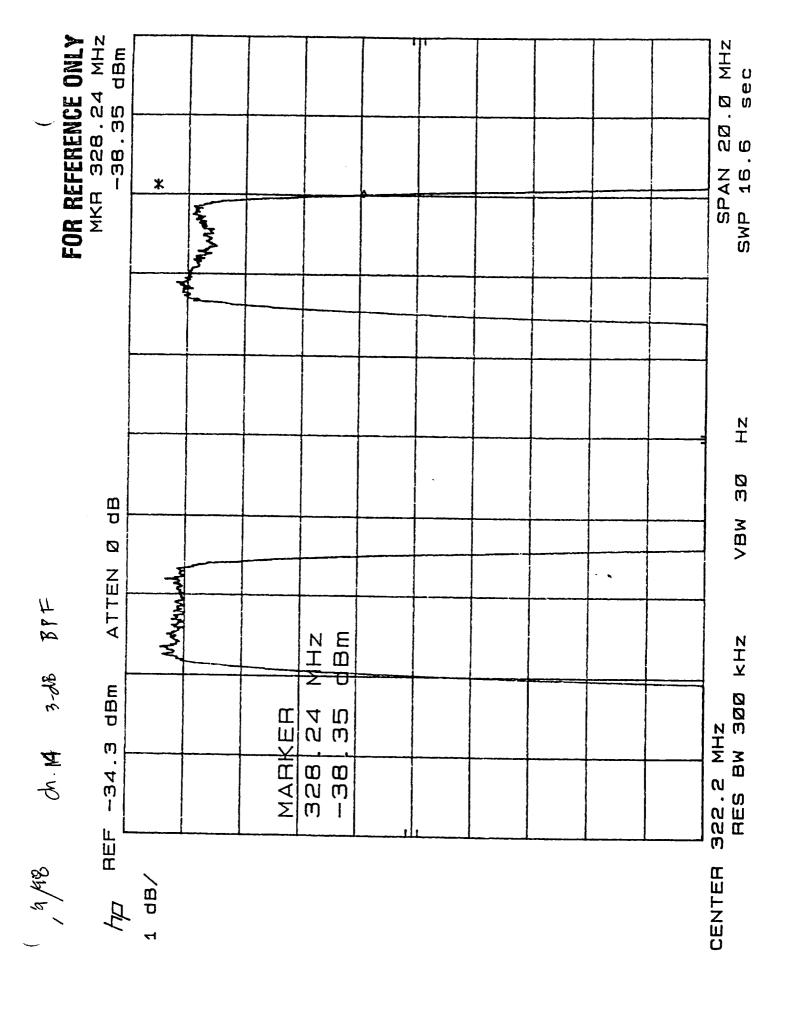


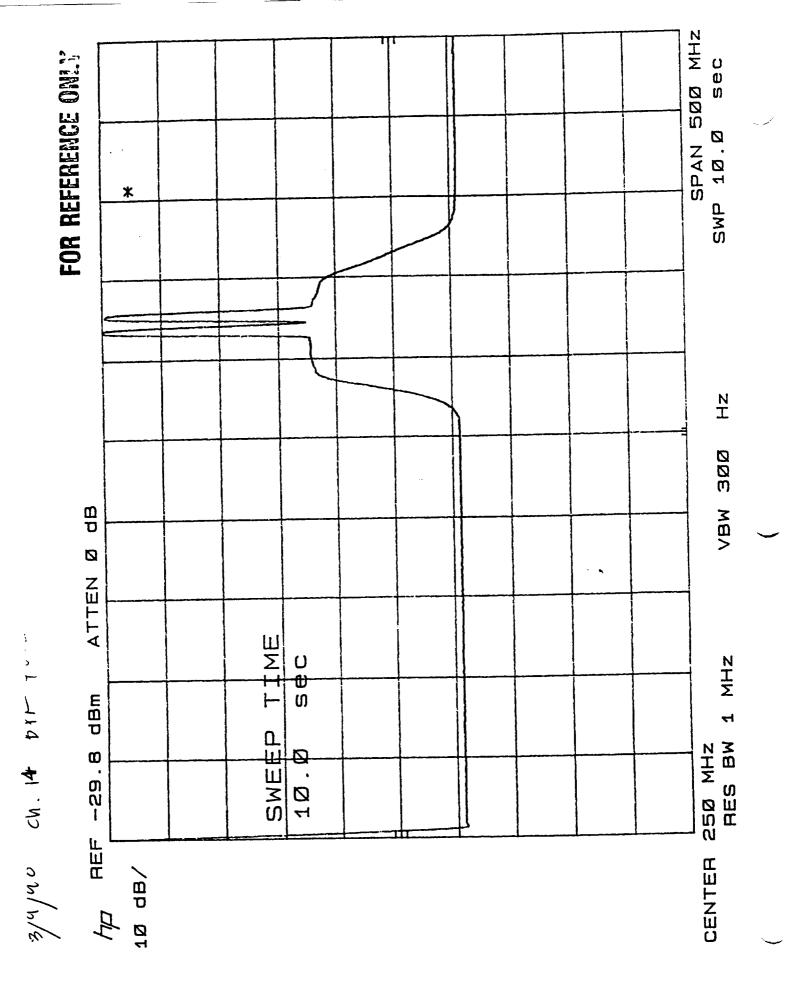


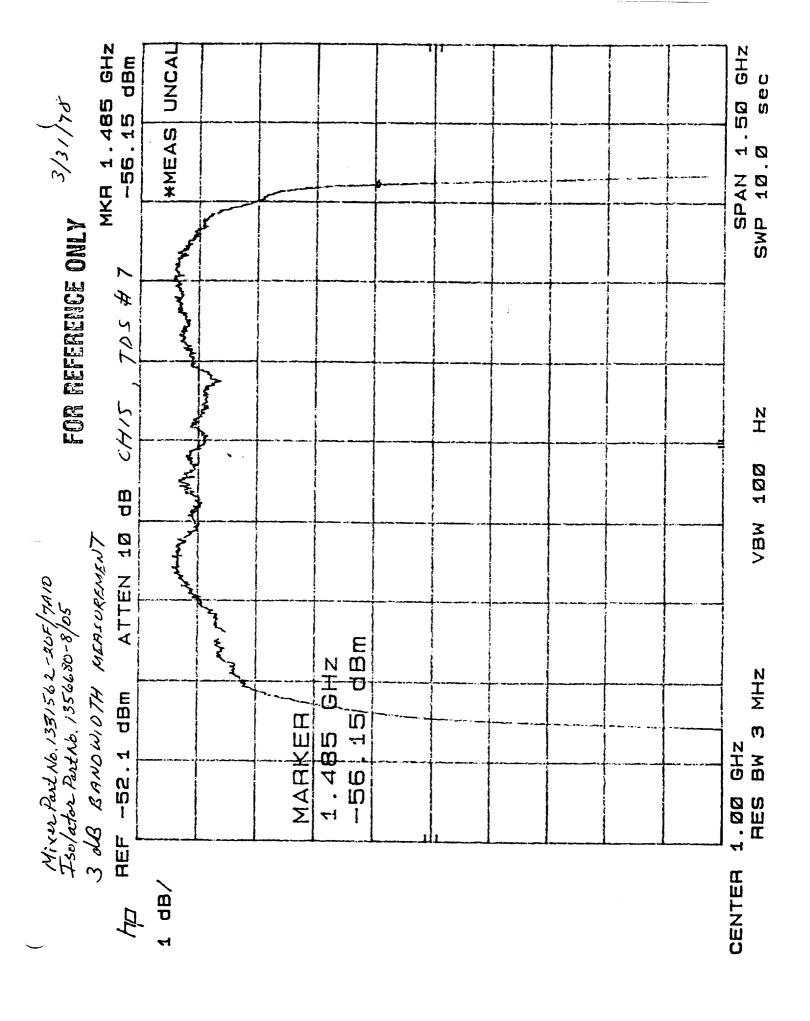


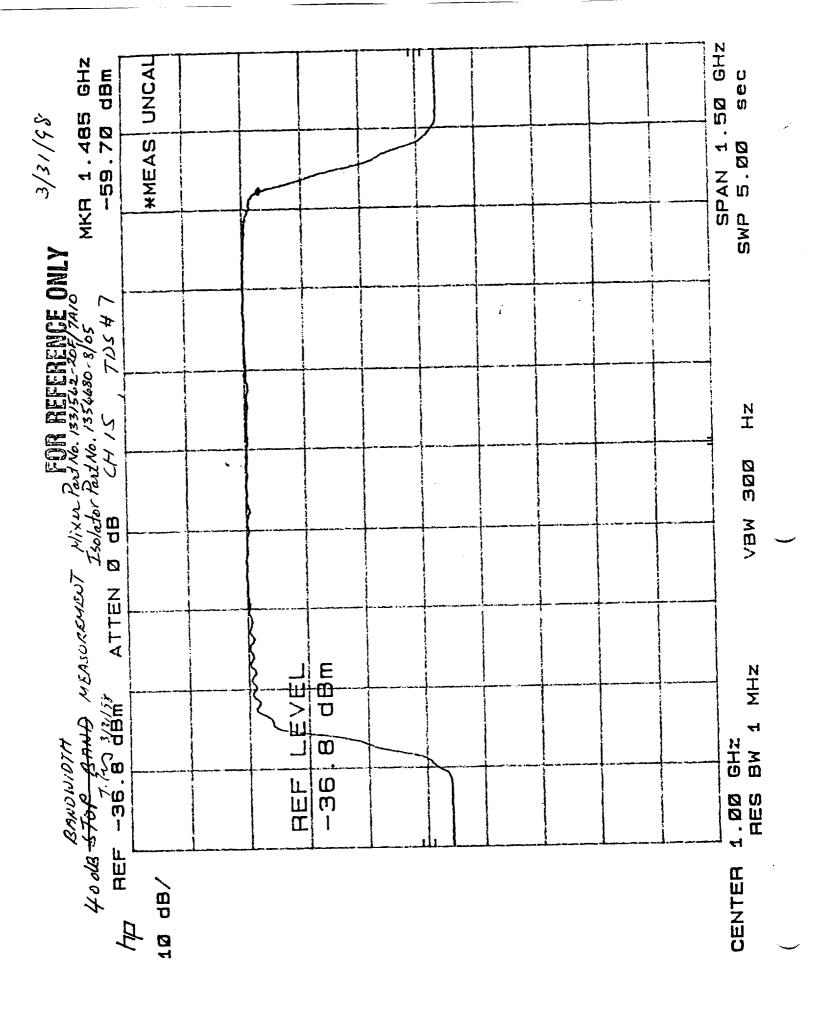


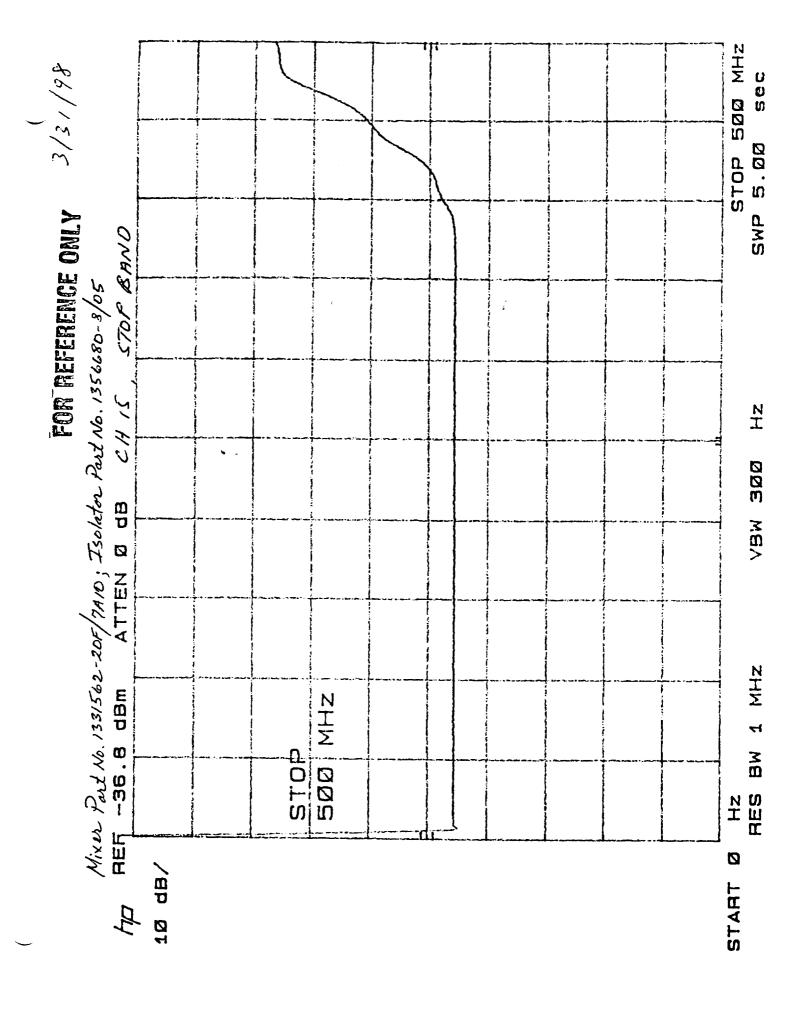












	CAL 2 HORNI
AMSU-A1-1, CH9, S/N F01, NF & NPS TEST DATA 3/10/98	(AI-2 HORN)
ZEI3 1EMP 1E31 1E31 1E11	(dB) NPS(K)
1 WARM TEST 296.2590111731 .00017686	
3 WARM TEST 296.2590145067 .00018567	70421 .04308342
E HARM TEST 296.2590183314 .00016710	
6 COLD TEST 79.3564040712 .00014741 4.079	96039 .05166987
8 COLD TEST 79.3564099639 .00016149 4.090	.08718101
9 WARM TEST 296.2590163545 .00015815	75450 .06851781
11 WARM TEST 296.2590163775 .00018403	29760 .03793818
13 WARM TEST 296.2590158702 .00020246	
14 COLD TEST 79.3564078857 .00016876 4.089	329083 .07979472
16 COLD TEST 79.3564053818 .00016351 4.085	39979 .04781021
17 LIARM TEST 296.2590144378 .00013400	858803 .07351372
19 WARM TEST 296.2590127070 .00015401	407186 .07451265
20 666 1631 13:33	
CH. 9 ,155 MHz MHz	

NOISE FIGURE AVERAGE (dB) = 4.08444825812

NOISE POWER STABILITY (K) = .0582012379421

NOISE POWER STABILITY DELTA (K) = .0691902228554

NPS_MAX (K) = .0871810133624 NPS_MIN (K) = .017990790507

Comparison Com			AMSU-A	1-1, CH 9,	S/N F01, F	AMSU-A1-1, CH 9, S/N F01, FLIGHT RECEIV	CEIVER SH	ER SHELF (A1-2 HORN)	HORN)	-			To	290					
Description Number Of V Hot V Hot V Cold V Cold Samples Mean Std Dev Mean Std Dev Mean Std Dev Cold Samples Mean're Std Dev Mean Std Dev Mean Std Dev Cold O-0-901 1173 0.000176860 -0.63982171 0.00017399 0.00017399 0.00017391 0.000183670 -0.63982171 0.00016355 0.00016355 0.00016355 0.00016355 0.00016355 0.00016355 0.00016355 0.00016355 0.00016355 0.00016359 0.00016369 0.00016359 0.00			(BPF 155.	.0 MHZ &	LO FREQU	JENCY 57.		(,					Thot	296.25	BandW	1.55E+08			
Description Number Of V Hot V Hot V Cold V Cold Samples Mean Sid Dev Mean V Cold Mean Sid Dev Mean V Cold Mean V Cold Samples Mean V Sid Dev Mean V Cold Mean V Cold O-0.9011301 0.000113650 0.6596969 0.00017309 0.00018310 0.00016310 0.6404811 0.000163760 0.9014311 0.00016378 0.00018310 0.6406988 0.00017720 0.00168760 0.9014310 0.00016378 0.00018310 0.6406988 0.00017720 0.00168760 0.64078857 0.000163760 0.0001637			3/10/98										Tcold	79.35	IntTime	0.165	overall		
Description Number Of V Hot V Hot V Cold V Cold V Cold Samples Mean Sid Dev Mean Sid Dev V Hot SidDevVh SidDevVh SidDevVh SidDevVh SidDevVh SidDevVc 1000 18560 - 0.5914301 0.00018580 - 0.6499639 0.00011309		_		_									CHconst	6.1327E-06			expected		
Description Samples Mean Sid Dev Mean Sid Dev Description Samples MeanVh SidDevPh SidDevVh SidDevPh SidDevVh SidDevPh SidDevVh SidDevPh SidDevPh SidDevPh SidDevPh SidDevPh SidDevPh SidDevVh SidDevPh Si	ă	$\overline{}$	Number Of	_	V Hot	V Cold	V Cold	Scale Fac	\vdash	Cold	Y Fact I	Log(Y)	Noise Fig	Tsys	dTrec	theory	test		
Description Samples MeanVh StdDevVh MeanVc StdDevVh 100 -0.9011173 0.000176860 -0.6396249 0.000173090 100 -0.9014357 0.000185670 0.63982171 0.000163350 100 -0.9014351 0.000168310 0.6409639 0.000146850 0.000177521 0.00016378 0.000164647			Samples	Mean	Std Dev	Mean	Std Dev	K/Volt	NEdT	NEdT		æ	ф	(K)	3	9/SP	NEdT		
100 -0.9011373 0.000176860 0.000176300 0.000176300 0.000167101010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010 0.0001671010101010101010101010101010101010	إ	_		;	:	:		1				$\neg \tau$							
1.000 -0.9014507 0.000185670 -0.6398217 0.00017151090 0.00017620 0.000185670 0.000185670 0.000185	282	_	Samples	Meanvh	StdDevVh			-			-	$\overline{}$	\neg	Tsys		theorydG/G			Cload
1.00			3 2				_	829.6967319	+	#		0.018	4.077	747.6540871	_	0.160	0.218	296.25	79.35
100 -0.901531 0.000128150 0.04099639 0.000117620 0.09016350 0.09016351 0.06026830 -0.64099639 0.000177620 0.09016351 0.000128150 0.064099639 0.000168760 0.09016378 0.000128150 0.064098631 0.000168760 0.09016378 0.000128150 0.06409811 0.000168760 0.09016378 0.000128150 0.06409811 0.000163760 0.090177707 0.000154010 0.064053818 0.000163510 0.09017707 0.000154010 0.064053818 0.000163520 0.0900 0.000175852 0.09001539 0.000153910 0.04045871 0.000164647 0.09015296 0.000175852 0.064053817 0.000164647 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.000175852 0.0900 0.0			3	-0.9014307	0.0001836/0			829.0300032	+	#		0.043	4.075	747.3356555		0.160	0.218	296.25	79.35
100 -0.9015359 0.000158150 -0.64099639 0.000161490 100 -0.9016358 0.000184030 -0.64094411 0.000146860 100 -0.9015870 0.0000184030 -0.64078857 0.00016376 100 -0.9017070 0.000158701 -0.6405288 0.000153510 100 -0.9017070 0.000154680 -0.6405388 0.000153510 100 -0.9017070 0.000154010 -0.6405288 0.000153520 100 -0.9015296 0.000175852 -0.64045871 0.000164647 2 0.500 2 0.000 2 0.000 2 0.000 2 0.000 3 0.000 3 0.000 3 0.000 4 0.000 5 0.			8	-0.9018331	0.000167100	-0.04040/12		829.080.2285	+	7	_	0.052	4.080	748.2331256		0.161	0.218	296.25	79.35
100 -0.9016378 0.000184010 -0.64094411 0.000146860 1.000 -0.9016378 0.000184010 0.000184011 0.000146860 1.000 -0.9015870 0.0000184010 -0.64094411 0.000146860 1.000 -0.901707 0.000184010 -0.640953818 0.000163510 -0.901707 0.000154010 -0.6405388 0.000153520 -0.9015296 0.000154010 -0.6405388 0.000153520 -0.9015296 0.000175852 -0.64045871 0.000164647 -0.9015296 0.000175852 -0.64045871 0.000164647 -0.900 -0.900 -0.901707 0.00175852 -0.64045871 0.000164647 -0.900 -0			3	160/1060-	0.000200830	-0.64099639	0.000161490	831.8098506	\dashv	#		0.087	2 0.	750.0871114	1	0.161	0.219	296.25	79.35
1.000 1.000 1.00015870 0.000120340 1.000140800 1.000140800 1.000180310 1.000140800 1.000168730 0.064053818 0.0001637510 1.064053818 0.0001637510 1.064053818 0.0001537510 1.064053818 0.000153520 1.064053811 0.0001537510 1.0001637510 1.064053871 0.0001537520 1.06405871 0.0001537520 1.06405871 0.0001537520 1.06405871 0.0001537520 1.06405871 0.0001637520 1.06405871 0.			3	-0.9016355	0.000158150	-0.64108868		832.4800956	+	7		0.069	4.094	750.5935656		0.161	0.219	296.25	79.35
1.000			3	-0.9016378	0.000184030	-0.64094411		832.0110916	-+	7		0.038	2	750.1726086		0.161	0.219	296.25	79.35
1.000 1.000	1		8 8	-0.9015870	0.000202460	-0.64078857		831.676722	+	_		0.080	4.089	749.8289374	_	0.161	0.219	296.25	79.35
1.000 1.000			3	-0.9013609	0.000168730	-0.64053818		830.9622432	+	#		0.048	4.085	749.1630429		0.161	0.219	296.25	79.35
1.000 0.900 0.900 0.900 0.900 0.300 0.300 0.100 0.100 0.100 0.100 0.100 0.100 0.100			20.	-0.9014498	0.000154680	-0.64005300	_	829.773037	+	\dashv		0.074	4.079	747.9987216	_1	0.161	0.218	296.25	79.35
1.000 0.900 0.900 0.200 0.100 0.100 0.000 1 2 3			3	-0.9012707	0.000154010	-0.64025288	0.000155520	830.977747	0.128 0	0.129	1.407679259	0.075	4.084	748.9358958	0.148	0.161	0.219	296.25	79.35
1.000 0.900 0.900 0.300 0.300 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100 0.100		AVEDACE		70015706	0.000175852	0.64045971	64647	1177010000	77.0	-	022112001		, 90	240,000,000	4				
1.000 0.900 0.500 0.300 0.100 0.100 1 2 3		3000		0.3013230	2000/10000	1,000	1	020.0104411	+	#		0.038	4.034	/49.0002/52	0.148	0.161	0.219	296.25	79.35
0.000 0.000 0.000 0.000 0.100 0.100 1 2 3										=		1							
1.000 0.900 0.500 0.400 0.300 0.100 1 2 3		- - - 							HNEdT										
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	SEQ	TEMP TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
	1	WARM TEST		99445749	.00033265		.14006357
	2	COLD TEST		70930953	.00021557	4.13263932	. 1400041.
7	3	WARM TEST		99330582	.00030027		.08849221
•	4	COLD TEST		70810714	.00022433	4.12678460	.00073221
V	5	WARM TEST		99259453	.00027892	4.12790631	.02685942
•	6	COLD TEST		70767305	.00021674	4.12750651	
	7	WARM TEST		99207144	.00029285 .00021878	4.11601036	.07331307
	8	COLD TEST		70652569 99160440	.00021878		
	9	WARM TEST		70511391	.00023535	4.09947866	.06287410
	10	COLD TEST		99120834	.00021354		
	11	WARM TEST		70575587	.00024863	4.11362888	.08688015
	12 13	WARM TES		99105303	.00028717		
	14	COLD TES		70599088	.00024885	4.11893621	.05976745
	15	WARM TES		99086518	.00030805		
	16	COLD TES		70514462	.00023824	4.10800011	.10370172
	17	WARM TES		99073988	.00027177		
	18	COLD TES		70507142	.00024205	4.10824506	.03729737
	19	WARM TES		99070411	.00028269		0.4002474
18	20	COLD TES		70584894	.00024235	4.12057553	.04607434

NOISE FIGURE AVERAGE (dB) = 4.11723146539

NOISE POWER STABILITY (K) = .0725323386736

NOISE POWER STABILITY DELTA (K) = .11320415061

NPS_MAX (K) = .140063567384 NPS_MIN (K) = .0268594167745

AMS	U-A1-1,CH10,	S/N FØ1,	NF & NPS TES	ST DATA	3/10/98	(A1-	2 HORN
				STD_DEV		dB)	NPS(K)
19 1	WARM TEST	296.45	99076401	.00023354			
₹0 Z	COLD TEST			.00023323	4.1373	0534	.11282369
3	WARM TEST		99053124	.00028750			
4	COLD TEST		70738781	.00026661	4.1462	1213	.06145452
5	WARM TEST		99037493	.00027888			
6	COLD TEST		70751807	.00020797	4.1499	5622	.03037386
7	WARM TEST		99027938	.00026465			
8			70660585	.00020771	4.1369	0524	.06009073
9	WARM TEST > 2	296.45	99017142	.00026638			
10	COLD TEST	79.2 5	70720311	.00023046	4.1473	3052	.05546003
11	WARM TEST	0.00	0.00000000	0.00000000			
12	COLD TEST	0.00	0.00000000	0.00000000	0.0000	0000	0.00000000
13	WARM TEST	0.00	0.00000000	0.00000000			
14	COLD TEST	0.00	0.00000000	0.00000000	0.0000	0000	0.00000000
15	WARM TEST	0.00	0.00000000	0.00000000			
16	COLD TEST	0.00	0.00000000	0.00000000	0.0000	0000	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000			
18	COLD TEST	0.00	0.00000000	0.00000000	0.0000	0000	0.00000000
19	WARM TEST	0.00	0.00000000	0.00000000			
20	COLD TEST	0.00	0.00000000		0.0000	0000	0.00000000
	10 ,78 MHz SE FIGURE AVE			F4F24642			
1101	SE FIGURE HVE	החטב וםם	4.143	34324 0 42			
NOI	SE POWER STAE	BILITY (K) = .0640	405669145			
NOI	SE POWER STAE	BILITY DE	LTA (K) =	.0824498	3309672		
NPS.	_MAX (K) =	.11	2823692061	NPS_MI	N (K) =	.030	3738610938
INT	EGRATION TIME	= .16	5				

				į		-									5 79.25		\$ 79.25		5 79.25																							1	
						\neg	_	296.45	296.45	296.45	296.45	296.45	296.45	296.45	296.45	296.45	296.45	\neg	296.45	-									BHNEdT														Γ
	-	oversii	expected	test	NEGT		testNEdT	0.266	0.266	0.265	0.264	0.265	0.266	0.265	0.265	0.262	0.267		0.265										•	١												Ì	-
2005107	7.80E+07	0.165		theory	900		theorydG/G	0.162	0.162	0.162	191.0	0.162	0.162	0.162	0.162	091.0	0.163		0.162													0.179			۽	2							
	BendW	IntTime		dTrec	(X)		Tree	0.211	0.211	0.210	0.210	1_	┷	4-	1_		┵	1	0.210													Ξ.											
T			6.1327E-06	Tsys	(K)		Tsys	756.4762365	756.6699847	754.6178389	751 7753056	754 2077021	9090221 557	753 2391687	753 2812756	743 6921616	758.2953681		753.7377102													77 0.211											
	Thot	Tcold	CHconst	Noise Fig.	99			4.127	4.128	4116	4 700	4114	V 110	4 108	201 V	4.052	4.137		4.111													0.207		_		•							
				Log(Y)	8		NPS	辶			_	-	_	_	-	_	_		0.069													0.234			 	-							
				Y Fact			YFact	1 402762045	1 402617395	1 ADA I SARD	1 405003041	14003030361	1,40440347	1,405/12901	1.405159421	1401010444	1 401407982		1.404838397													0.219				•	spe.						
				Plo	NEdT		CNEAT	1	9910	7710	20.00	8 6	0.159	05.0	0.181	5 0	0.102		0.177		٦.														}		Messurement sets						
OKA				To	1	╁╴	HNEGT	+	╫	2000	0.223	0.219	1770	0.219	0.234	0.207	0.110	6.173	0.216		HNEGT											0.227				so.	ž						
AMSU-A1-1, CH10, S/N F01, FLIGHT RECEIVER SHELF (A1-2 HORY)				Coate Fac	+	\dagger	CraiFac	33	+	1/07/15/50/	760.64868/0	758.1403487	760.897252	761.939107	760.1833064	760.321948	745.8992028	102.3042040	750 7283757													0.219				₹							
CEIVERSH	0321 GHZ)	-		7.5	Cold Dev	200	CodPanVc			2 0	8780	2840	8630	0.000248850	0.000238240	0.000242050		33230	910112000 0 10001300 0 03013000 0 01013019	0.0002000.0												0.223				6							
LIGHT RE	NCV 57.29				v Cold	Mcan	7,7	Meanve	-0.70810/14	-0.70767305	-0.70652569	-0.70511391	-0.70575587 0.000248630	-0.70599088	-0.70514462	-0.70507142	-0.70584894	-0.70697757 0.0002	1000000	-0.70042051												6213				8	ı						
S/N F01, F1	CERT TO MHT & LO FRECHENCY 57.290321 GHZ				V Hot	Std Dev	4		-0.9933058 0.000300270	-0.9925945 0.000278920	-0.9920714 0.000292850	-0.9916044 0.000288580 -0.70511391 0.00021	-0.9912083 0.000298960	-0.9910530 0.000287170	-0.9908652 0.000308050 -0.70514462	-0.9907399 0.000271770 -0.70507142	-0.9970411 0.000282690 -0.70584894 0.000243500	-0.9907640 0.000233540	0 0000	0.000284280												0.229											
.1, CH10,	WH7 & 1.	South			V Hot	Mean	:	MeanVh	-0.9933058	-0.9925945	-0.9920714	-0.9916044	-0.9912083	-0.9910530	-0.9908652	-0.9907399	-0.9970411	-0.9907640		-0.9921248			٤	3	0.900	0.800	0.700	080		0.500	0.400	0300	0.200	0.100	88								
AMSU-A1	0 01 300	(Drr /0.0	3/10/98		Number Of	Samples		Samples	901	001	8	80	001	001	81	8	8	100										•	1P3	3N 3°	oН												
					Description			Description												AVERAGE																		 ·	T	,	·		
T	\dagger				Data [$\overline{}$	Data				-		1	1	1																											L

AMS	U-A1-1, CH	11,S/N FØ1	I, NF & NPS TE	ST DATA	3/10/98 (AI-2 HORN)
	_		VOLTAGE		NF (dB)	NPS(K)
1	WARM TEST		95982244	.00030066		
2 3	COLD TEST		70271250 95919264	.00019227		.09590036
4	COLD TEST	79.15	70155891	.00029540 .00023797	4 43707143	
5	WARM TEST		95888688	.00023737	4.42383142	.08365316
8	COLD TEST	79.15	70053917	.00027262		.04658540
7	WARM TEST	296.65	95862335	.00022303		
8	COLD TEST	79.15	69931701	.00024528		.10527090
9	WARM TEST		95857590	.00028185		
10	COLD TEST	79.15	69958556	.00021357	4.39801707	.03843619
1.1	WARM TEST	296.65	95842857	.00027084		
12	COLD TEST	79.15	69959472	.00019922	4.39999081	.05293635
13	WARM TEST	296.65	95835245	.00030082		
14	COLD TEST	79.15	70040673	.00024661	4.41469451	.09581991
15	WARM TEST	296.65	95855172	.00029418		
16	COLD TEST	79.15	70135062	.00021151	4.42826400	.08112132
17	WARM TEST	296.65	95851784	.00026077		
18	COLD TEST	79.15	70008852	.00025106		.08130895
19 20	WARM TEST	296.65	95847491	.00030336		
20	COLD IEST	79.15	69973525	.00023149	4.40179625	.10191983
CH.	11 ,72 MHz	: МН	lz			
NOIS	SE FIGURE A	NVERAGE (d	IB) = 4.4112	28771 70 6		
NOIS	SE POWER ST	ABILITY (K) = .07840	05237 470 1		
NOIS	E POWER ST	ABILITY D	ELTA (K) =	.06683471	25602	
NPS_	MAX (K) =	.1	05270903315	NPS_MIN	(K) = .0	384361907545

						Closed	79.15	79.15								79.15	70 14																									
							296.65	296.65	296.65	296.65	296.65	296.65	296.65	296.65	296.65	296.65	20 200	7,000											1000	INEG												
	overall	expected	123	NEdT		testNEdT	0.293	0.292	0.291	0.290	0.291	0.291	0.292	0.293	0.291	0.291	1000	1670											į													
7 20E+07	10.165	1	theory	9/9p		0	0.174	0.174	0.173	0.173	0.173	0.173	0.173	0.174	0.173	0.173		0.173													0.255				•	2						
Wheel	Inflime		dTree.	3		dTrec	0.236	0.235	0.234	0.233	0.234	0.234	_	0.235	_	0.234		0.234													970	: •	_		<u> </u>	.						
39 700	T	Z	Teve	(K)		Tsys	811.9537529	809.7712951	807.2759631	804.0705006	805.0117168	805.3746215	808.0832073	810.5913975	806.7104390	805.7067592		807.4549653															_									
2 3	100	plos	CHCOUST Notes Fig	4 B		NFdB	4.436	4.424	4.410	4.393	4.398	4.400	4.415	4.428	4.407	4.402		4.411													0.249				\	•						
			200				960.0		0.047	_	0.038					-		0.078													0.254					^						
			7	1 ract		YFact	1.365882121	1.367230358	1.368784104	1.370799418	1.370205383	1.369976849	1.368280028	1 366722567	1 369138063	1.369767937		1.368678683														0.220				.	e te					
		+	:	NEAT CORE	1	CNEdT	$\overline{}$	0.201	0.193	0.206	0 179	0.167	0 208	0170	0211	0.195		0.190			=														1		Measurement sets					L
TORN)				HOL	+	HNEAT		+-	╀	┿	╁	╫	0.254	0740	0210	0.255		0.243													0 934	0.23				40	2					
ER SHELF (A1-2 HORN)				Scale Fac	+	ScalFac	12		4	+-	╀	+-	+	+		4-		842.2013554													0.256					₹						
	0321 GHZ)			N Cold	Std Dev	StdDevVc	10		0.70053017 0.000729660 841 8886314	0.000245280						0.000231000	20000	-0 9587427 0 000288547 -0.70048890 0.000225864 842.2013554														0.230				60						
LIGHT RE	(BPF 72.0 MHZ & LO FREQUENCY 57.290321			N Cold	Mean	MeenVc	O TOTAL DED	0.70144801	0 70063917	0 69931701	10/10/00/0-	0.000251830 -0.69936330	0.70040673	-0.9583525 0.000300820 -0./00406/3 0.000246010	-0.9585517 0.000294018 -0.70135062 0.000211510	0.7000352	-0.077135.0-	-0.70048890													Ş	0.249				2						
S/N F01, F	O FREQUI			V Hot	Std Dev	T/Amount		0.000300660	0.000293400	0.0002/2620	0.0000000	0.9585/59 0.000281850 -0.099560	0.000270840	0.000300820	0.000294018	-0.9585178 0.000260770	0.00030330	0.000288547													,	0.234 1										
1, CH11,	MHZ & L			V Hot	Mean		Meanvil	-0.9598224	07616660-	0.9588809	-0.9380234	-0.9585/59	0.9584280	-0.9583525	-0.9585517	-0.9585178	-0.9584/45	0 9587427					٤	3	080	0.800	0020		99.0	0.500	 		0.200	0.100		33.						
AMSU-A1-1, CH11, S/N F01, FLIGHT RECEIV	BPF 72.0 N	3/10/98		Number Of	Samples		23	\top	8	1	1		7				8						•	- (o	0	0	, (O INE		_	-	J								
		-		Description			Description											AVEDACE	AVERAGE														=								.,	
F	-	-	+-	Data E		_	Data		+	1		1					1			1										T										$oldsymbol{\perp}$		

		SU-A IES				
AMS	U-A1-1, CH	12, S/N F	01, NF & NPS	TEST DATA	3/10/98 (A/	- 2 HORN)
SEQ	TEMP_TEST	TEST TEN	1P VOLTAGE	STD_DEV	NF (dB)	
1	WARM TEST	296.65	-1.08756210	.00045309		
2	COLD TEST		79466918	-00036845	4.41215619	.10160599
3	WARM TEST	296.65	-1.08664766	.00049166		
4			79337433	.00035905	4.40278882	.09975466
5	WARM TEST	296.65	-1.08591662	.00045848		
6	COLD TEST	79.15	79237843	.00032726	4.39588882	.08492224
7	WARM TEST	296.65	-1.08552235	.00043182		
8	COLD TEST	79.15	79369504	.00037664	4.41989636	.14279367
9	WARM TEST		-1.08554840	.00049563		
10	COLD TEST	79.15	79294342	.00036605	4.40834772	.11141294
11	WARM TEST	296.65	-1.08551615	.00049647		
12	COLD TEST	79.15	79311243	.00037958	4.41123057	.11356791
13	WARM TEST	296.65	-1.08553792	.00046453		
14		79.15	79330257	.00034695	4.41384062	.06398906
15	WARM TEST	296.65	-1.08553439	.00050193		
16	COLD TEST	79.15	79288744	.00036198	4.40766317	.12603666
17	WARM TEST	296.65	-1.08547702	.00045562		
18	COLD TEST	79.15	79401787	.00035084	4.42524129	.09310618
19	WARM TEST	296.65	-1.08560556	.00048661		
20	COLD TEST	79.15	79296153	.00033754	4.40799394	.08660166
сн.	12 ,32 MHz	M	Hz			
NOIS	SE FIGURE A	VERAGE (dB) = 4.41	051179495		
NOIS	SE POWER ST	ABILITY	(K) = .102	379098062		

NOISE POWER STABILITY DELTA (K) = .0788046106446

NPS_MAX (K) = .142793670174 NPS_MIN (K) = .0639890595291

						Closed	3.5	79.15			_					79.15		79.15																			1	$\frac{1}{2}$
							286.63	296.65	296.65	296.65	296.65	296.65	296.65	296.65	296.65	296.65		296.65									HNEGT											$\left \right $
:	overall	expected	test	NEdT		testNEdT	0.392	0.391	0.390	0.393	0.392	0.392	0.392	0.391	0.393	0.392		0.392	,									<u> </u> }					_					
-	0.165		theory	9/Dp	_	0	0.173	0.173	0.173	0.174	0.173	0.173	0.173	0.173	0.174	0.173		0.173										0.362					9					
	IntTime		dTrec	(K)			0.351	0.351	0.350	0.352	0.351	0.351	0.352	0.351	0.353	0.351		0.351										Ş	· =									
296.65 B		8	╀╌	(X		Tsys	807.6151405	805.8893935	804.6205669	809.0439210	806.9130505	807.4444560	807.9258639	806.7869145	810.0320469	806.8478598		807.3119213										3 0.340										
Thot	Tcold	1.	1	89		NFdB T	4.412	4.403	4.396	4.420	4 408	4.4	4414	4 408	4 425	4 408		4.411	\perp									0.373						•				
			(V)ac	9			0 0.102	0.100	-			٠.,						5 0.102										246					^					
			V Fact			YFact	1 368572140	1 369653162	1 370452020	1 367681912	1 369011171	77867876	1.3060/6//0	1.3083/81/1	1.36505051	1 369051989	S. COLON	1 368763825										0.369			-			D	t sets			
			Plan	NEdT		CNEdT	0 274	9900	0.242	1800	233	0.00	707.0	0.23	0.203	707.0	1070	0.266	3	HNEdT															Measurement sets			
			125	NEAT		HNEdT	922 0	0 365	240	0.240	0.326	0.300	0.309	0.340		0.040	706.0	0 357	4000	Ī								0.368					•	NO.	ž			
CHZ)			100	VANIE TAC	10.2	ScalFac	747 5077074	870867 17	740.0509040	746.9398049	143.3037894					746.2452285	143.2231120	742 A 500B77	143.4390621										0.322					₹				
CEIVER SE				V Cold	Sid Dev	StdDev.Vr	10	0.000360050	0.0003539050	0.000327260	0.000376640	0.000366050	-0.79311243 0.000379580	-0.79330257 0.000346950	0.000361980	0.000350840	0.000337540	0.00000	0.000357434										0.340					60				
AMSU-A1-1, CHIZ, S/N FUI, FLIGHT RECEIVED	(BPF 32.0 MHZ & LO FKEQUENCT 3/.270341			N Cold	Mcan	2/2007/	Meanve	-0./9400918	-0.79337453	0.000458480 -0.79237843	0.000431820 -0.79369504	0.000495630 -0.79294342 0.000366050	-0.79311243	-0.79330257	-0.79288744	0 -0.79401787	-1.0856056 0.000486610 -0.79296153 0.0003		-1.0858868 0.000473584 -0.79333422 0.0003									•	0.365					8				
S/N FUI, F	O FREQUI			V Hot	Std Dev		StdDevvn		0.000491660	0.000458480	0.000431820	0.000495630	0.000496470	-1.0855379 0.000464530	0.000501930	0.000455620	0.000486610		0.000473584										0.336					-				
l, CH12,	THZ & L			V Hot	Mean		MeanVh	-1.0875621	-1.0866477	-1.0859166	-1.0855224	-1.0855484	-1.0855162	1.0855379	1.0855344	-1.0854770	1.0856056		-1.0858868			8		 3	8	8	 }	8	0.400	0.300	0.200	0.100	0000					
MSU-A1-	BPF 32.0 N	3/10/98		Number Of	Samples	\dashv	Samples				001	901	901		Γ	100	001			i		1.000		a O	0.800	0.700		3N 14 0.50 1.50		0.3	0.2	0	, 6					
∀ !	<u> </u>	3/		Description N			Description									-			AVERAGE																			
-	_	\vdash	-	Data De			Data De		-		-	+	\dagger	+	-	\dagger	\vdash	\vdash	< -	T			Π			T	T							T				_

	SEQ	TEMP_TEST	TEST TEM	P VOLTAGE	STD_DEV	NF (dB)	NPS(K)
	1	WARM TEST	296.75	92768776	.00071508		
	2	COLD TEST	79.15	66797247	.00046465	4.24377145	.36070780
	3	WARM TEST	296.75	92372051	.00064549		
	4	COLD TEST	79.15	66520216	.00041790	4.24523303	.25731037
	5	WARM TEST	296.75	92141573	.00057935		
	6	COLD TEST	79.15	66407333	.00040632	4.25426211	.10021940
	7	WARM TEST	296.75	92047467	.00058020		
	8	COLD TEST	79.15	66302951	.00039684	4.24803633	.10587082
	9	WARM TEST		91959674	.00054820		
	_10	COLD TEST	79.15	66236449	.00043247	4.24748049	.11902447
ı	11	WARM TEST	296.75	91895377	.00059288		
J	12	COLD TEST	79.15	66159332	.00046327	4.24223349	.15036116
v	13	WARM TEST	296.75	91829667	.00053095		
	14	COLD TEST	79.15	66177063	.00041632	4.25332659	.16429922
	15	WARM TEST	296.75	91812094	.00049265		
	16	COLD TEST	79.15	66206864	.00041669	4.26058607	.23520187
	17	WARM TEST	296.75	91779379	.00059799		
	18 19	COLD TEST	79.15	66136552	.00042096	4.25259692	.16655769
10	20	COLD TEST	296.75 79.15	91722845 66139749	.00055485	4 2524444	00045545
<u> </u>	20	COLD 1531	75.15	66139749	.00037669	4.26011414	.08845515
		13 ,16 MHz SE FIGURE A			076833724		

NOISE POWER STABILITY (K) = .174800795681

NOISE POWER STABILITY DELTA (K) = .272252651318

NPS_MAX (K) = .360707799604 NPS_MIN (K) = .0884551482855

		AMS	J-A TEST				(AI- & HOKN)
	AMSL	J-A1-1, CH1:	3, S/N F01	, NF & NPS T	EST DATA	3/10/99 (
	SEO	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
18	1 2	WARM TEST COLD TEST	296.75 79.15	91617547 66143165	.00061757 .00041942	4.27373759	.21516914
J	3	WARM TEST COLD TEST	296.75 79.15	91590515 66146089	.00060709 .00042646	4.27759935	.19275632
_	5 6	WARM TEST COLD TEST	296.75 79.15	91590638 66161456	.00053180 .00039323	4.28023055	.15995897
	7 8	WARM TEST	296.75 79.15	91543412 66099423	.00053789	4.27542116	.14337953
2 <u>0</u>	9 10	WARM TEST	79.15	91540365 66087480	.00053734	4.27374388	.14478505
	11 12	WARM TEST COLD TEST	0.00 0.00	Ø.00000000 Ø.000000000	0.00000000 0.00000000	0.0000000	0.00000000
	13 14	WARM TEST COLD TEST	0.00 0.00	0.00000000 0.00000000	0.00000000 0.00000000 0.00000000	0.00000000	0.00000000
	15 16	WARM TEST	0.00 0.00	Ø. ØØØØØØØØØ Ø. ØØØØØØØØØ Ø. ØØØØØØØØØ	0.00000000 0.00000000 0.00000000	0.00000000 	0.00000000
	17 18	WARM TEST	0.00 0.00	0.00000000 0.00000000 0.00000000	0.00000000 0.00000000	0.00000000	0.0000000
	19 20	WARM TEST COLD TEST	0.00 0.00	0.00000000	0.00000000	0.00000000	0.0000000
	CH.	13 ,16 MHz	мн	Iz			
	NOI	SE FIGURE A	NVERAGE (d	(B) = 4.276	614721751		
	NOI	SE POWER ST	ABILITY (κ) = .1713			
	NOI	SE POWER ST	ABILITY D	DELTA (K) =	.0717896		
	NPS	S_MAX (K) =	.2	21516914305	NPS_MI	N (K) =	143379529311

						Cload				79.15	79.15	79.15	79.15	79.15	79.15	79.15		79.15		T	Ì																		Ì				
						Wload	1	296.75	296.75	296.75	296.75	296.75	296.75	296.75		296.75		290.73					-				1		<u></u>	EdT	<u>'</u>	1		-		t			 			 	
		overall	expected	test	NEdT	testNEdT	T	0.508	0.509	0.508	0.509	015'0	0.511	0.511	0.510	0.510		0.309												■ HNEdT													
	1 60E+07	0.165		theory	9/Op	theorydG/G	0.167	0.167	0.167	0.167	0.167	0.168	0.168	0.168	0.168	0.168		0.108											97.0	0.439							\$						-
	BandW	IntTime		alge de	8	oTrec t	+	0.479	0.480	0.479	0.480	0.482	0.482	0.482	0.482	0.482	107.0	0.40]							
290	296.75	1	6.1327E-06	Tsys	8	Tsys	776.9816238	778.9515458	780.2433977	778.7904648	780.1593315	782.5892784	783.2794524	783.7500565	782.8900748	782.5903988	3073600	6706770.10											0.480	3	·						•						_
To	Thot	╀	\perp	Noise Fig	88	NFdB T	4.242		Н	Н	\dashv	\dashv	+	+	\dashv	4.274	1766	+											0.466	66.0						•	•						_
				(Y)	8	NPS	0.150									0.145	7710											9,50	erc.0								_						
				Y Fact		YFact	1.389000980	1.387635879	1.386745852	1.387747144	1.386803645	1.385140052	1.384670150	1.384350399	1.384935115	1.385139288	1 386216850	000170001										0.528]	_	_					1
	-			B 5	5 2 2		0.392	0.353	0.354	#	=	#	=	#	+	0.329	0.358	‡=	1				·					č	8								Đ	Messurement sets					1
HORN)					NEGI	12		-	-	-+	+	+	+	+	+	0.459	0.477	+-		HNEAT									0.472								n	Messur					
/ER SHELF (A1-2 HORN)				Scale Fac	Zvoit	+	_	-	-		-	_	-	-	+	854.9129107	20028 851 7921098	_											0.507					-		•	•						-
CEIVER SI	0321 GHZ)			V Cold	old Dev							0.000419420	0.9139032 0.00000/090 -0.00140089 0.000426460 855.1971265	0.000393230	06678	84650													-	0.419		_			-	,	,						
LIGHT RE	ENCY 57.29			V Cold	IIICAIII	MeanVc	-0.66159332	-0.66177063	-0.66206864	-0.66135520 0.000420960	-0.66139749 0.000376690	-0.00143103	-0.00140089	0.000537800 -0.66161456 0.000393230	-0.00039423	-0.0003/480	-0.66145614 0.0004												0.450	_				-									
AMSU-A1-1, CH13, S/N F01, FLIGHT RECEIV	(BPF 16.0 MHZ & LO FREQUENCY 57.29032)		7, 17.4	10L V	200		0.000592880 -0.66159332	-0.9182967 0.000530950 -0.66177063	0.9181209 0.000492650 -0.66206864	0.000597990	0.917285 0.000554850	0.9161735 0.000617570 -0.66145165 0.000419420	0.9139032 0.00000/090 -0.00140089 0.000426460	0.000531800	0.000337890 -0.00099423 0.000	0.000337340	-0.9169218 0.000560101																			,	•						
I-1, CH13,	MHZ & L		V Uot	Mean		McanVh	-0.9189538	-0.9182967	0.9181209	0.017/938	2971760	0.9101/33	2006016.00	0 01 54241		-0.9134037	-0.9169218					8		 8	8				08:0	5	3	8	8	Q		 	-						***************************************
AMSU-A	(BPF 16.0	3/10/98	Number	Sample	3	Samples	001	3 5	3 8	3 8	3 2	8 8	3 8	81	3 2	3						1.000	i	0.900	0.800	0.700		11 08.9	0.500 ME	10H		0.300	0.200	0.100		00 00 00 00 00 00 00 00 00 00 00 00 00							
			Description	TOP TOP TOP TOP TOP TOP TOP TOP TOP TOP		Description	T										AVERAGE																									-	
						Data																				Τ													T	T	T		

AMSU-A1-1, CH14, S/N F01, NF & NPS TEST DATA 3/10/98 (A1-2 HORN)

	SEO	TEMP_TEST	TEST TEM	P VOLTAGE	STD_DEV	NF (dB)	NPS(K)
	1	COLD TEST	296.75 79.15	-1.08042225 78384318	.00207958 .00088476	4.33000007	1.30127150
7	3	WARM TEST	296.75 79.15	-1.09104681 78764959	.00120012 .00095823	4.27328733	.34979710
J	4 5 6	WARM TEST	295.75 79.15	-1.09326197 78688507	.00114411 .00078971	4.23937230	.22648041
	7 8	WARM TEST	296.75 79.15	-1.09208777 78796965	.00114650 .00078703	4.26708270	.23706051
	9		296.75	-1.09537629 78773720	.00123861 .00084584	4.22982520	.40148168
	11	WARM TEST	296.75	-1.09594490 78742044	.00109391 .00076218	4.21950811	.09082836
	12	WARM TEST	296.75 79.15	-1.09543797 78688259	.00116951 .00078377	4.21704216	.27822600
	14	WARM TEST	296.75	-1.09511164 78668463	.00125019	4.21755777	.41833222
	16 17	WARM TEST	296.75	-1.09448176 78678302	.00115750 .00076975	4.22539651	.25479739
18	18 19 20	WARM TEST	296.75	-1.09415670 78644600	.00108470 .00077403	4.22392484	.12785607
-							

CH. 14 ,6 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.24443587983

NOISE POWER STABILITY (K) = .36861312498

NOISE POWER STABILITY DELTA (K) = 1.21044312548

 $NPS_MAX(K) = 1.30127150167$ $NPS_MIN(K) = .0908283761833$

}

AMSU-A1-1, CH14, S/N FØ1, NF & NPS TEST DATA 3/10/98 (A1-2 HORN)

	SEQ	TEMP	_TEST	TEST TEM	P VOLTAGE	STD_DEV	NF (dB)	NPS(K)
14	1	WARM	TEST	296.75	-1.09281102	.00108703		
ميد	2	COLD	TEST	79.15	78717213	.00074613	4.24813067	.11179912
	3	WARM	TEST	296.75	-1.09203843	.00099430		
	4	COLD	TEST	79.15	78577157	.00083641	4.23604027	.33017720
	5	WARM	TEST	296.75	-1.09164026	.00108657		
	6	COLD	TEST	79.15	78412807	.00074156	4.21666420	.10750682
	7	WARM	TEST	296.75	-1.09123978	.00115185		
	8	COLD	TEST	79.15	78456980	.00073860	4.22707215	.24978406
	9	WARM	TEST.	296.75	-1.09060943	.00114915		
	10	COLD	TEST	79.15	78448212	.00076343	4.23230022	.24530043
	11	WARM	TEST	0.00	0.00000000	0.00000000		
	12	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	13	WARM	TEST	0.00	0.00000000	0.00000000		
	14	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	15	WARM	TEST	0.00	0.00000000	0.00000000		
	16	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	17	WARM	TEST	0.00	0.00000000	0.00000000		
	18	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	19	WARM	TEST	0.00	0.00000000	0.00000000		
	20	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 14 ,6 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.23205384725

NOISE POWER STABILITY (K) = .208913524204

NOISE POWER STABILITY DELTA (K) = .222670376661

 $NPS_MAX (K) = .330177196446 NPS_MIN (K) = .107506819785$

Ī					T	1	70 14		79.15						79.15		79.15		2.5																								
	1					_	Daol W		_			296.75	296.75	296.75	296.75	296.75	296.75		296.75											1	B HNEdT												
	Ilmayo	OVCIBIL	expected	131	NEG	41 014	testived	0.804	0.798	0.803	0.796	0.794	0.794	0.794	0.795	0.795	0.800		0.797																								
6 00F±06	0.000	6		theory	900		theorydG/G	0.108	0.167	0.168	0.166	0.166	0.166	991.0	0.166	0.166	0.167		0.167				!			9774											•	2					
Dend	Danie I	III IIIIC		91780	8			0.780	0.780	0.785	0.779	0.777	0.776	0.777	0.778	0.778	0.782		0.780								. 1											_					
30, 30,	ī	_	6.1327E-06	Tsys	(K)		Tsys	782.5088290	776.4743513	781.4013146	774.7841170	772.9617621	772.5268063	772.6177479	774.0013202	773.7413678	778.0282082		775.9045824							787												•					
2 2	1,110,1	DISSI T	CHconst	Noise Fig	gg B			4.273	4.239	4.267	4.230	4.220	4.217	4.218	4 225	4224	4.248		4.236							0.819										_	\	•					
				Log(Y)	æ	\neg		0.350	0.226	0.237	0.401	1600	_						0.250						0.882													~					
			\Box	Y Fact			YFact	1.385194900	1.389354064	1.385951566	1 390535181	1 391816677	1 392123786	1 392059535	1 301084622	1 391 267 423	1 388274532		1.389766228							0.625								•		_		₩	ŧ				
				Cold	NEdT			0.687	0.561	0.563	865 0	0 538	0.553	0.530	0.544	1450	0 531		0.576		Ę	;				J]		Measurement sets				
INORA)				Hot	NEdT		HNEdT	1980	0.813	0.820	9280	0.772	3080	C 88.0	0100	0.00	0.774		0.821		HNEGT	!					0.772							.,			Ę	IO.	ž				
ER SHELF (AI-2 HOMY)				Scale Fac	K/Volt		-	717.2092176	710.2363135	715 5114598	CALLCUL TOC	0012100 301	105 271 8633	705 5140353	707 1050163	707 1577796	711 0517834	100000	709.2602885						0.876													4					
	(ZHS)			V Cold	Std Dev		StdDevVc	0.000958230	_	2020				0000/83//0	-1.0951118 0.001250190 -0.78668463 0.000303480 703.31432.32	000744000	0007/1000		12215							0.820				_								n					
IGHT REC	CY 57.2903			V Cold	Mean		MeanVc	0 78764859 0	0 78688507	0.78706065	0.7877770	0.78773740	0.78/42044	0.78688259	0.78008403	-0.786/8302 0.000/69/30	0.78044900	0.78/1/213	0 787 16293	2						0.813												8					
/N FUI, FL	(BPF 6.0 MHZ & LO FREQUENCY 57.290321 G			V Hot	Std Dev		StdDevVh	te	0.001200120	0.00114500 0.78796955	0.001146300 -0.7873330 0.00645840	010857100	-1.0959449 0.001093910 -0.78742044 0.000762160	-1.0954380 0.001169510 -0.78688259	0.001250150	0001157500	0.001084/00 -0.78644600 0.0001/4030	0.00108/030	1 0030717 0 001157218 -0 78716293 0 0008	2000																		_					
I, CH14, S.	HZ & LO	_		V Hot	Mean		MeanVh	0			-1.09208/8	-1.0953763 0	1.0959449	1.0954380	1.0951118	1.0944818	-1.0941567 0	-1.0928110	1 0030717	11/6660-1-				£	L	0.900 0.861	080	40	90,0	0.600	0.500		-	0.300	0.200	0.100	0000						
AMSU-A1-1, CH14, S/N F01, FLIGHT RECEIV	BPF 6.0 M	3/10/98		Number Of	Sample	Camping	Samples	+	3	T	1	1						8		+		•		Ŧ	ŕ	Ö	Ö	i ć	S			I SOH		oʻ	Ó	Ó	c						
¥	<u>=</u>	15		$^{+}$	Describtion	-	Description	Scripcion										+	200	AVERAGE																							
		+	+	_	Data	+	<u>م</u> و م	-		-	\dashv							+	-	<								П					T	T	Ī			\neg			T	T	T

AM	L U -	A /-	1,CH1	5, S/N: F	ol, NF &	NPS TEST	OATA 3/31	192
			TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)	
1	WARM	TEST	295.25	00172976	.00000027			
2	COLD	TEST	79.15	00144221	.00000020	6.51459020	.17955338	
3	WARM	TEST	296.25	00172705	.00000018			
4	COLD	TEST	79.15	00144088	.00000022	6.52869114	.09425883	
5	WARM	TEST	296.25	00172617	.00000017			
5	COLD	TEST	79.15	00143992	.00000020	6.52523770	.08325838	
7	WARM	TEST	0.00	0.00000000	0.00000000			
8	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000	
9	WARM	TEST	0.00	0.00000000	0.00000000			
10	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000	
1.1	WARM	TEST	0.00	0.00000000	0.00000000			

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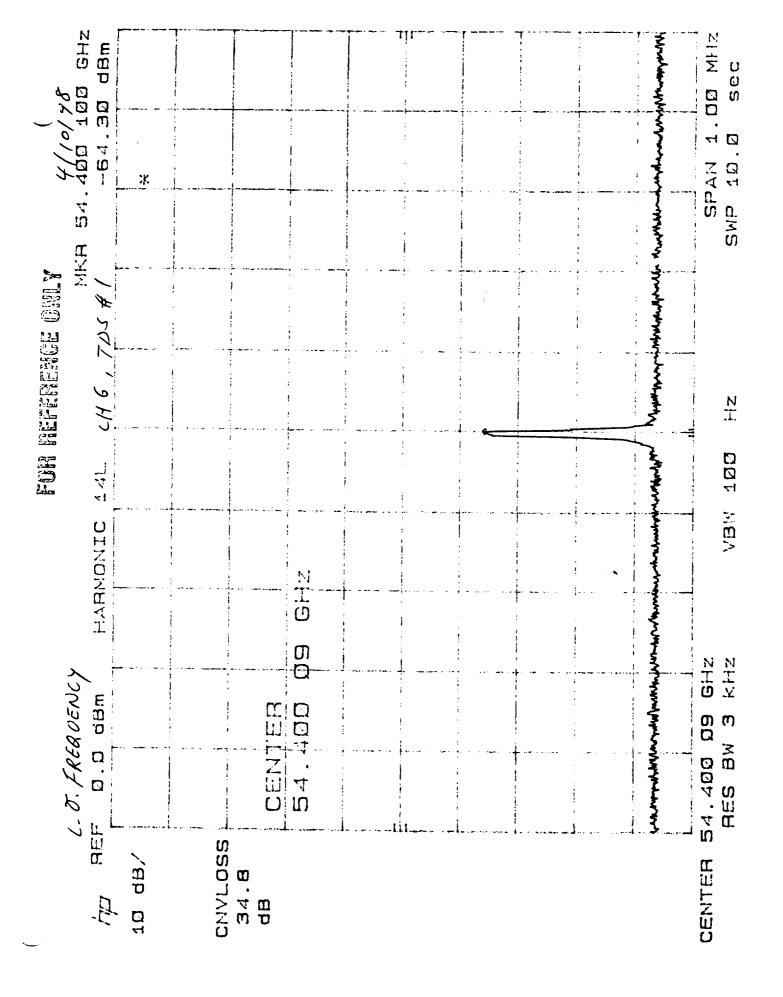
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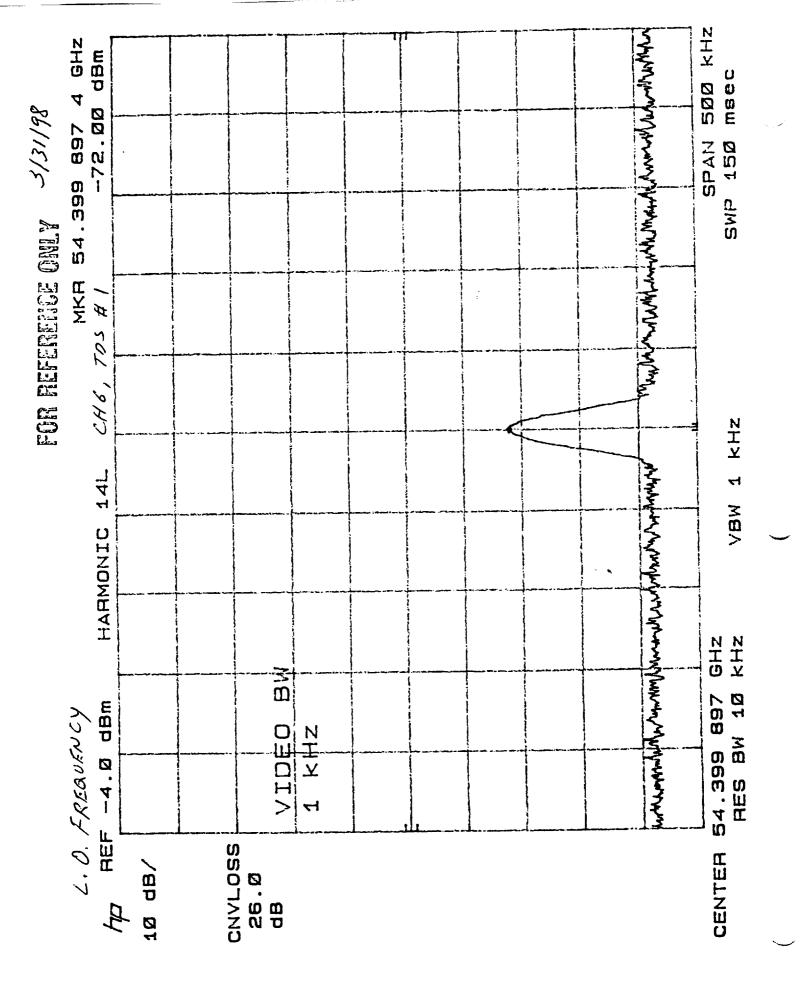
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TEST DATA SHEET 1 LO Frequency Test Data (Paragraph 3.5.1) (A1-1)

			LC) Frequen	cy Test Data	(Paragraph	3.5.1) (A	1-1)		
Test Setup	Verif	ied: 7.	Z Signatur	1		e Temperatu				
Compo-		Channel	V _b (V)	I _b (mA)	T	P _{dc} (mW)			(011.)	
nent		No.		1.5()	Required		Pass/	To	(GHz)	Pass/
	-	6	1007	 	(Max)	Measured	Fail	Required	Measured	Fail
	-		9.97		2,700	1794.6	P	54.400 ± 0.003	54.400	P
		7	9.94 Posi-	194	2,700	1928.4	P	54.940 ± 0.003	54,940	p
		9			9,000			í		
		10	tive	616	(13,500)*	7776.5	P			
	LO	11	15.1	515		,,,,,	/	57.290344	57.290310	P
	No.	12	Nega-		1,500			± 0.000 150. CE (c		1
LO	1	13	tive			0.01 11	م	<i>08</i> 6		
		14	15,1	64		966.4	8	57,290310	1	17
		9	Posi-		9,000					\rightarrow
	ľ	10	tive		(13,500)*		l			
	LO	11						57.290344		
	No.	12	Nega-		1,500			± 0.000150		
	2	13	tive		·		į	_ 0.000100		$\angle \parallel$
		14		Ì		İ			\rightarrow	
	 	15	2242	22-2						
		15	14.89	33	3500	İ		88.980 ± 0.080	1	
Mixer/ Amps		All	9.94	242	2,550	2,415				
IF Amps		All	7.95							
				rimary:	24,510	2099				
				10#1						
TO	OTAL		Ren	ndancv	(29,010)* 24,510					
				LO#2)	(29,010)*					
' Indicates i	require	d values fo	r the PI∩	specifies	I in AE-2666	<u>IF</u>				442525
				Specifiel	· III AE*2000(ss = P, Fai	il=F
FLC	, i E00	k Detect				PLO	2 Lock	Detect		
nes NT.	/2/						Ç	15/		
art No.:					_ To	est Engineer	:_ <i>C</i>	Like	·	
rial No.:		FOI			O	uality Assura	ance:	`		
		—- -						/ 0.8		
					D	ate:	1101	75		
									-	

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		•		
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TEST DATA SHEET 4 IF Output Power Test Data (Paragraph 3.5.2) (A1-1)

Test Setup Verified:	7.	7 Nuy Signature	·	Baseplate Temperature (T _B) 2	5.7	_°C
	•	Signature				

Compo-	CI	hannel	V _b (V)	l _b (mA)	P _o (dBm)	Atten (dB)	Po	(dBm)	
nent		No.					Required	Measured	Pass/ Fail
		6	9,97	180	-20.11	7	-27.0 ± 1.0	-27.24	P
		7	9.94	194	-19.02	8	-27.0 ± 1.0	-26.94	P
		9	Posi-		-20.34 B	7	-27.0 ± 1.0	-27.40	P
		10	tive		321.01	6	-27.0 ± 1.0	-26,88	ρ
	LO	11	15.1	515	-2/:00	6	-27.0 ± 1.0	-27.04	ρ
	No.	12	Nega-		-20.68	6	-27.0 ± 1.0	-26.54	٩
LO	1	13	tive	64		7	-27.0 ± 1.0	-27.31	P
		14	15.1		-20,72	4	-27.0 ± 1.0	-26.55	P
		9	Posi-				-27.0 ± 1.0		
		10	tive				-27.0 ± 1.0		
	LO	11					-27.0 ± 1.0		
	No.	12	Nega-				-27.0 ± 1.0		
	2	13	tive		2.75		-27.0 ± 1.0		
		14	1				-27.0 ± 1.0		
		15					-27.0 ± 1.0		<u> </u>
Mixer/ Amps		All	9.94	242					
IF Amps		All	7.95	264					

Pass = P, Fail = F

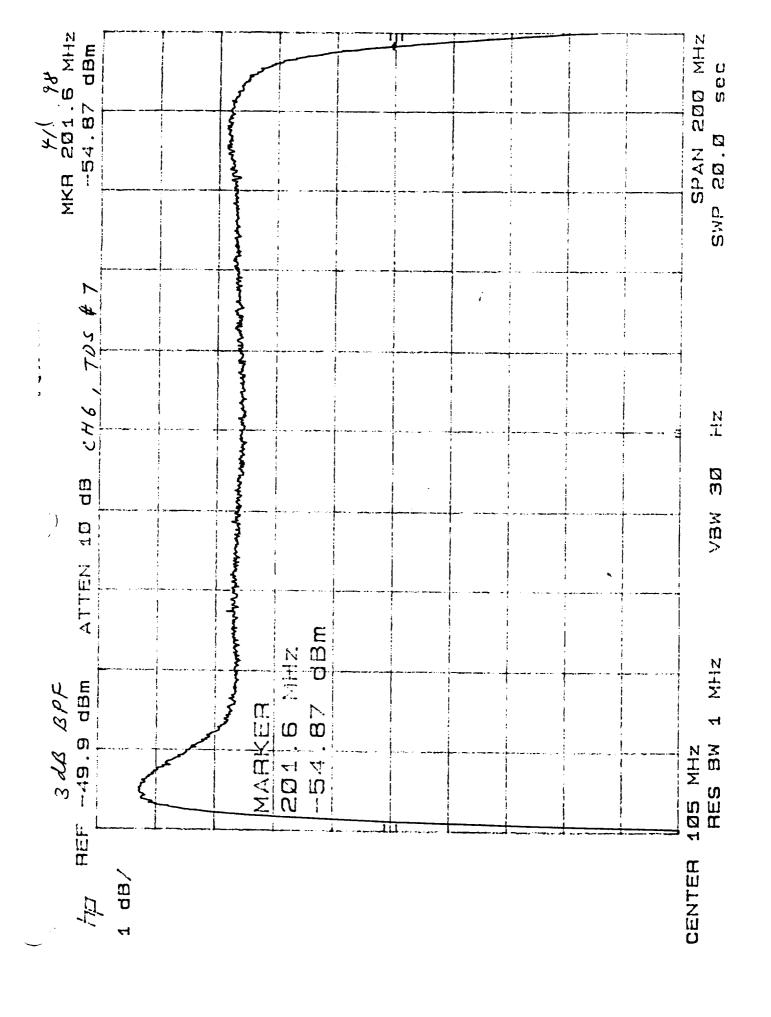
Part No.: /356429 - /	Test Engineer:
Serial No.: FO /	Quality Assurance:
	Date: 4/10/98

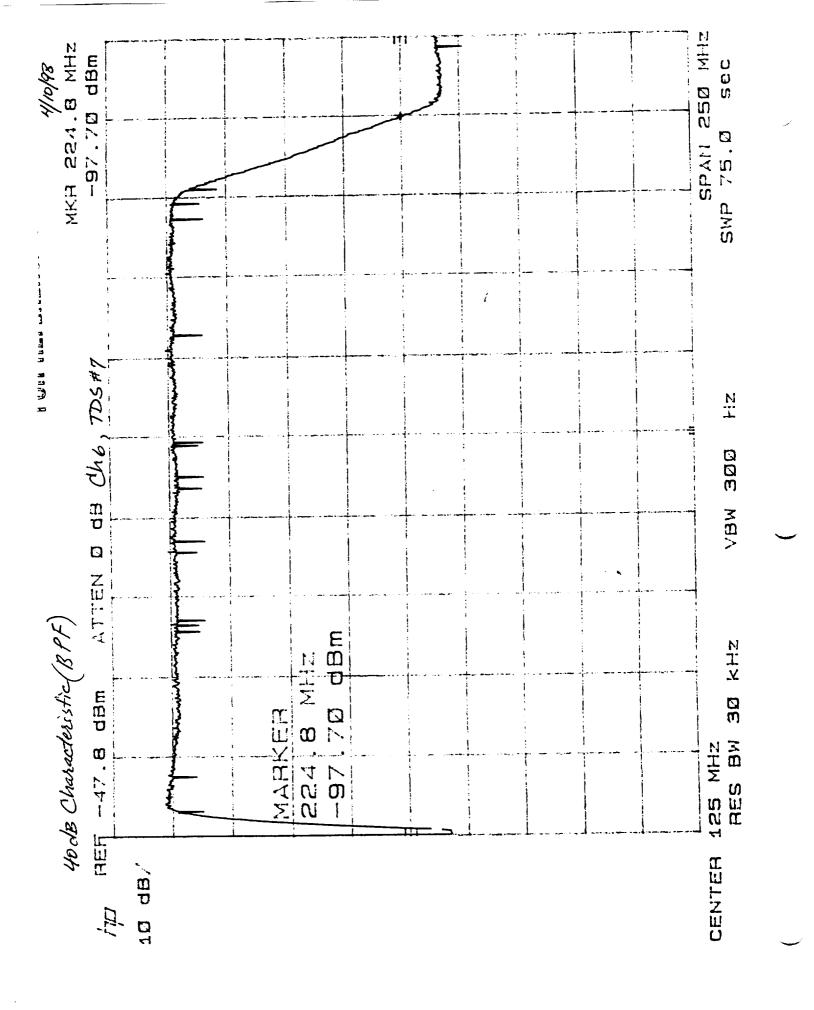
Tes	st Setup V	Verified:_	Sign	nature	Bas	seplate Tem	perature (T _B)	<i>30,3</i> ℃		
	Compo	nent	Channel No.	V _b (V)	I _b (mA)	3 dB BW (M	Frequency !Hz)	3 dB BW (M	Frequency Hz)	Pass/Fa
		ar <u>a</u>	•			Lower	Higher	Required MAX	Measured	
7	LO		6	9.97	180	7.4	201.6	490200	194.2	P
			7	9.94	194	5.8	200,0	409260		P
10		LO	9	Positive	X			25/65		
		No.	10					78		
		1	11		\times			36.36		
•			12	Negative	><			16 /6		
			13					8 8		
			14 -		$\nearrow \checkmark$			3.3		
		ro	9	Positive				33765		
		No.	10					78		
		2	11					36 36		
			12	Negative				16/6		
	1		13					-8-8		
	Į		14					3 3		
			15	<u> </u>				-6000/200g		
1	Mixor/Arr		All							
	IF Amp	s	All							
	, Anp	3								
	lo.: No.:		6429 =01	-/		Test En	gineer:	Hek	1/2	

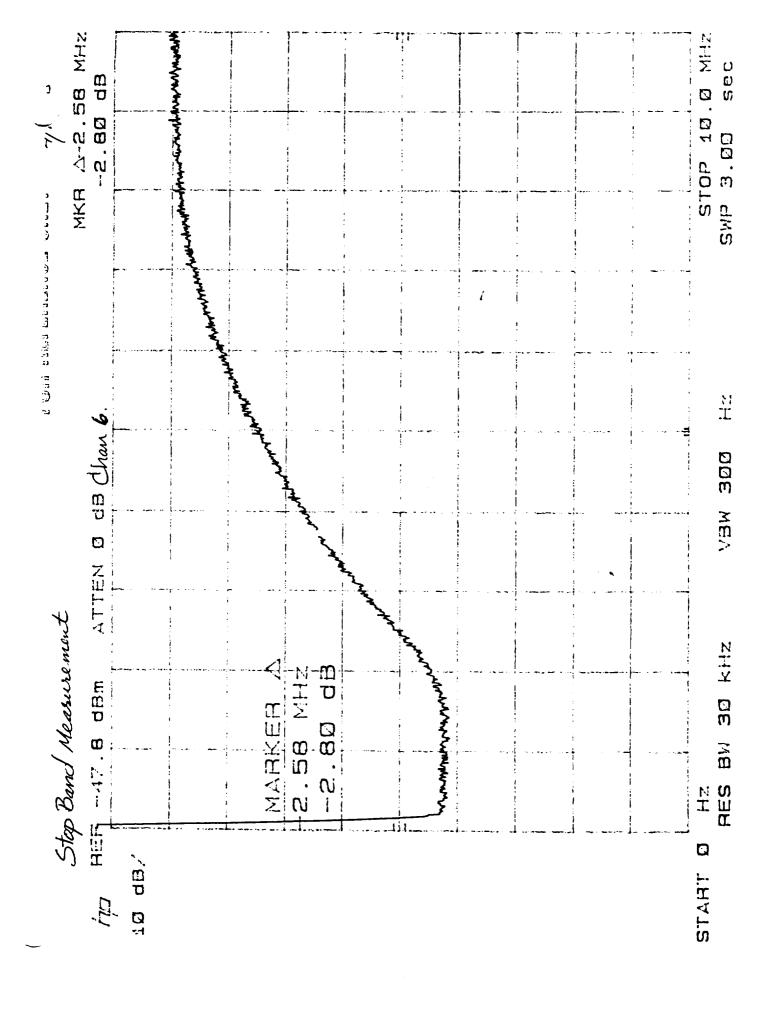
SHEET U) OF ECR NO. 1) 64

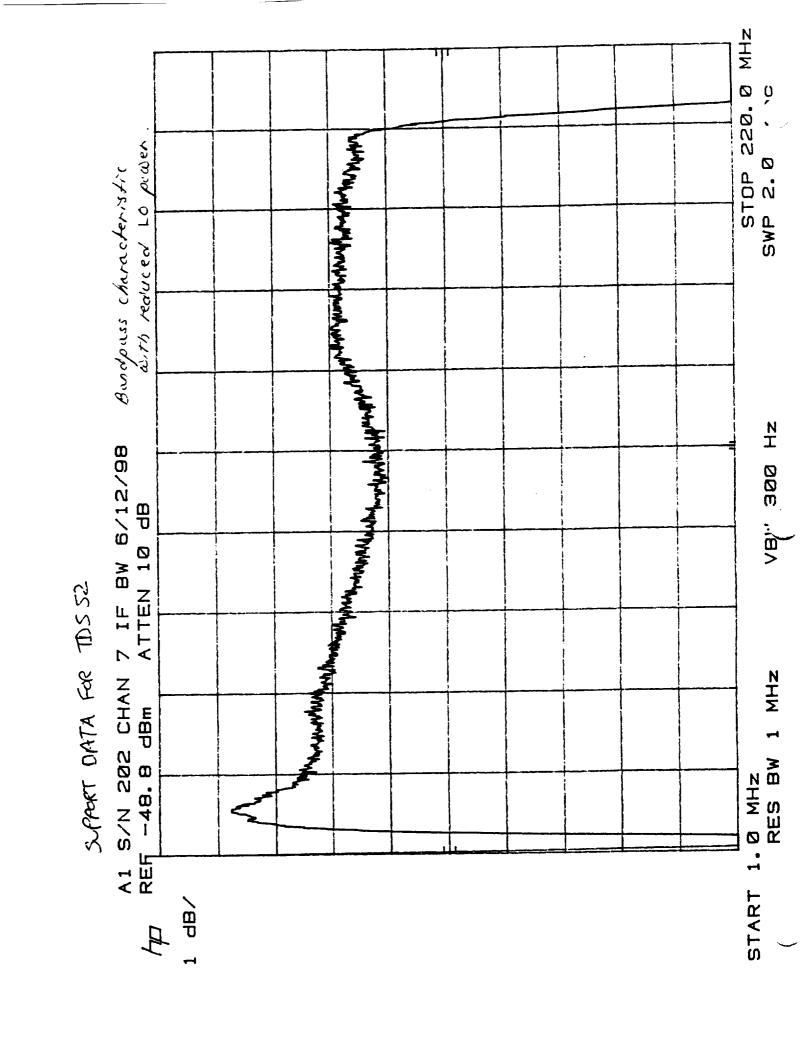
TEST DATA SHEET 7 (Sheet 2 of 2) Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-1

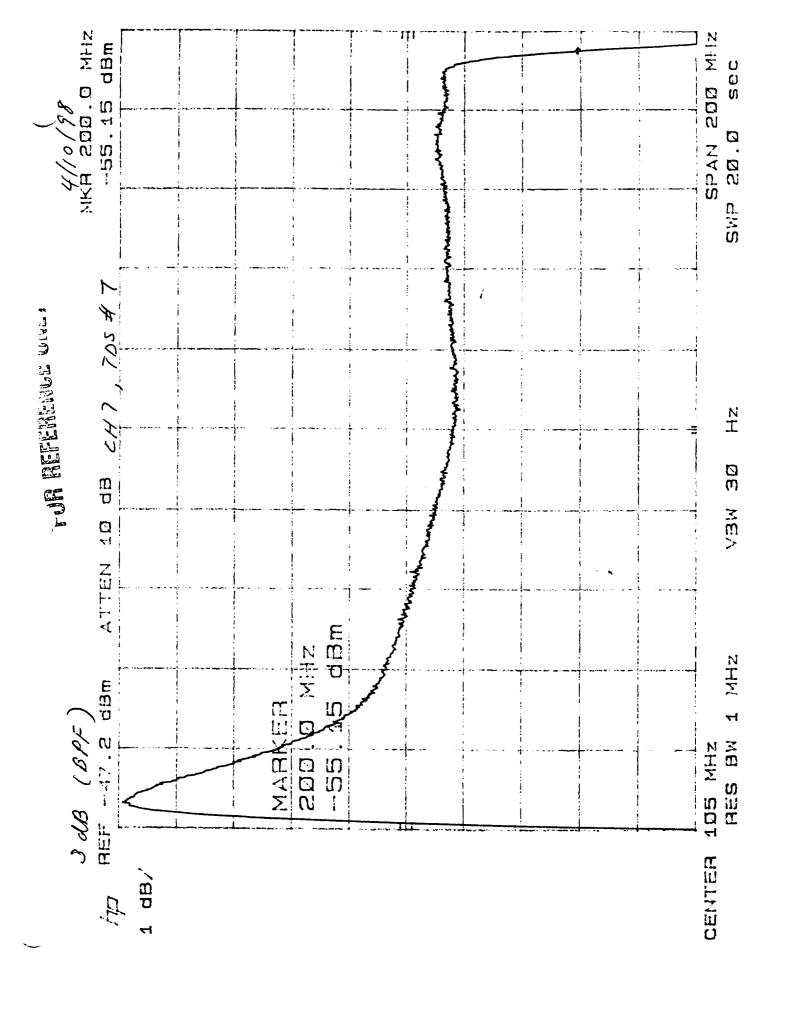
Bandpass Characteristics Test Data (Paragraph 3.5.3) (A1-1)										
	Test Setup V	erified:_	7. 7 Sign	acture .	Baseplate Temperature (T_B) $30, 3 \circ C$					
-[Component		Channel No.	V _b (V)	i _b (mA)	40 dB BW Frequency (MHz)		40 dB BW Frequency (MHz)		Pass/Fail
			•			Lower	Higher	Required MAX (Ref Only)	Measured	
	LO		6	9.97	180	2.3	224.8	X-520-1	222.5	P
			7	9.94	194	2.0	222.8	520 \$	220.8	P
		LO	9	Positive				429		
		No.	10	: <i>)</i>				- HO1		
		1	11 .					₹T_	•	
			12	Negative				-#-		
			13					19		
			14					1 H		
		LO `	. 9	Positive				129		
		No.	10					A01 3		
	·	2	11					47 7		'
			12	Negative				721-7		
			13 .	- 1				1-10-7		
			14					1-4-		
			15					7800-		
	Mixer/Amps		All				*			
	IF Amps		All							記事業置
Do not change this column Leave it be et. T. Trink 4/8/18										
Part No.: 1356429-1 Test Engineer: Lexition Serial No.: F01 Quality Assurance:										
	Date: 4/10/98									

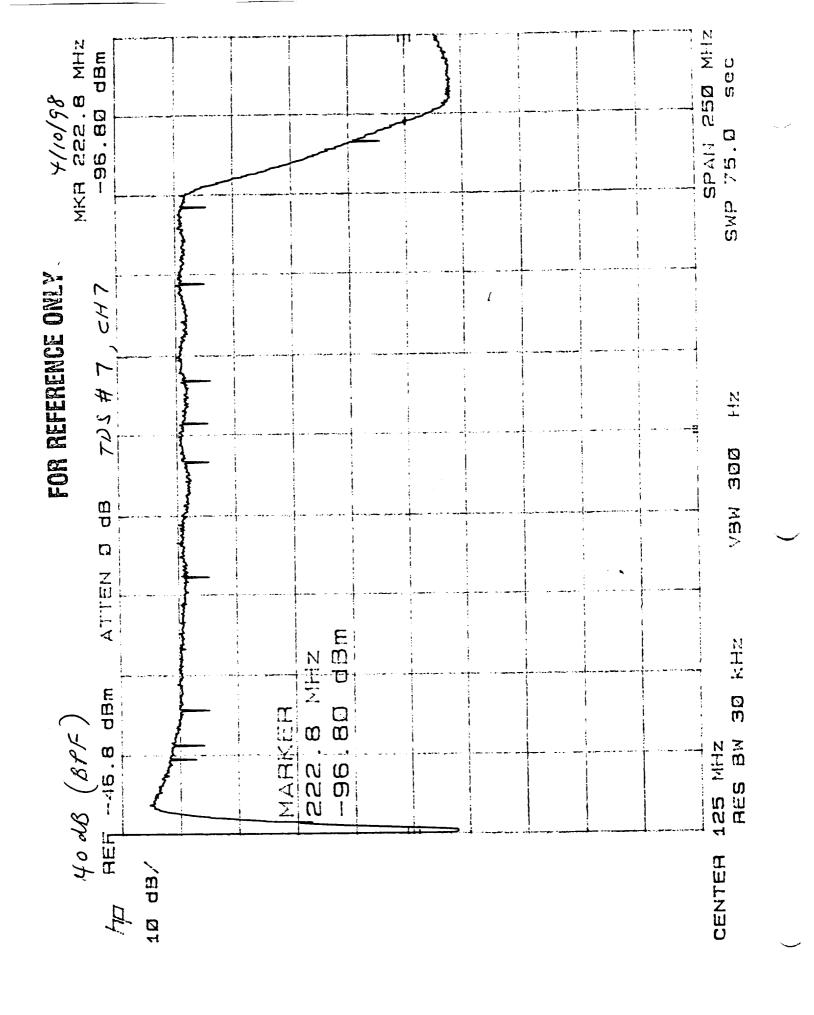


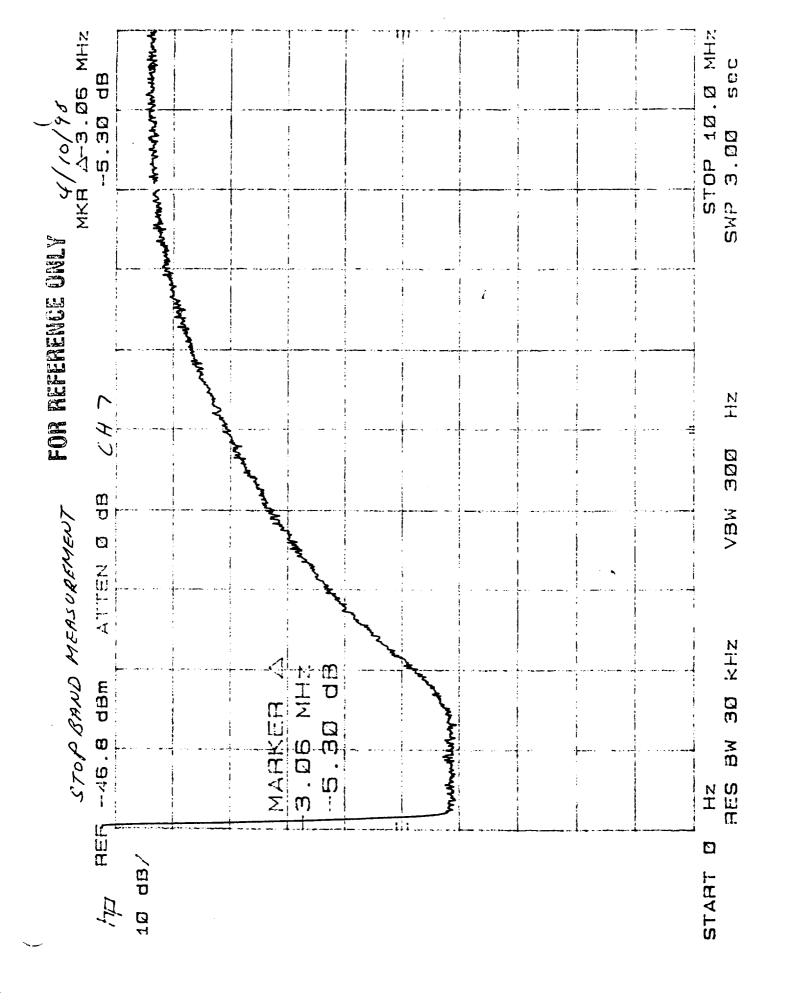












TEST DATA SHEET 10 (Sheet 1 of 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Compo-	Channel	V _b (V)	l _b (mA)	T _H (°C)	V _H	(V) Standard	T _C (°C)	Vc	(V) Standard
nent	No.				Mean	Deviation		Mean	Deviation
				23.7	-,9652	. 00646	-194.0	-,6829	.00021
				23.7	- 9620	.00023	-194.0	-, 6813	.00017
				23.7	-,9609	.00021	-194,0	6809	,00020
		997	180						
LO	CHILLIAN RAP	01	4						
	Gill Ma	My G							
		199							
	K. Key	7							
						1			
Mixer/ Amps	All	9.90	124.	2					
IF Amps	All	 		ι					
SEE	PRINT					7.(NF	8 NPS) .	
							2 -		
rt No.:	13564	29-	-/		· Test l	Engineer:	1-10	<u>~</u>	

TEST DATA SHEET 16 (Sheet 3 of 10) Noise Figure and Noise Power Stability Test Data (Paragray)

Test Sett	up Verifie∴_		my	Baseplat	eplate Temperature (T _B) <u>30,3</u> °C							
		NF ((dB)				NPS (i	···				
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required	Measured	Average	Delta	Pass/Fail			
6	14.25	4.05			*100							
		4.06										
		4.07										
		$\left \cdot \right $										
		\bigwedge										
	5.25		4.06	PK	.08)							
	*	/ T REQUI		K			F	Pass = P,	Fail = F			
(D) NPS	15 NO	7 REQUI	RED FO	R THIS	RECFI	VER SA	IECF (1	91-1)	•			
						^	1 (1 †					
		29-1			Test Engine	er: <i>7</i> /2	ollo	<u> </u>				
Serial No.:	FO	/			Quality Assu			 				
				:	Date:	4/10/	98					
												

A-15 Rappor

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH6, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMF_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST		96519120	.00046306		
2	COLD TEST		68293507	.00021134	4.05415710	.33205442
3	WARM TEST		96198591	.00023166		
4	COLD TEST		68127672	.00016698	4.05366555	.12209902
5	WARM TEST		96094337	.00021227		
6	COLD TEST		68089632	.00020343	4.06926410	.09906953
7	WARM TEST		0.00000000	0.00000000		
8	COLD TEST		0.00000000	0.00000000	0.00000000	Ø. ØØØØØ ØØØ
9	WARM TEST		0.00000000	0.00000000		
_		7 7 7 7 7	0.00000000	0.00000000	0.00000000	0.00000000
10			0.00000000	0.00000000		
11			0.00000000	0.00000000	0.00000000	0.00000000
12	COLD TEST		0.00000000	0.00000000		
13	WARM TEST			0.00000000	0.00000000	ଡ.ଡଡଡଡଡଡଡ
14	COLD TEST		0.00000000		0.000000	0.0000000
15	WARM TEST		0.00000000	0.00000000	0.0000000	0.00000000
16	COLD TEST	r 0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TEST	г 0.00	0.00000000	0.00000000		
18	COLD TEST	T Ø.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM TEST	r 0.00	0.000000000	0.00000000		
20	COLD TEST		Ø. ØØØØØ ØØØ	0.00000000	0.00009000	0.00000000

CH. 5 ,194.2 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.06236672606

NOISE POWER STABILITY (K) = .184407656029

NOISE POWER STABILITY DELTA (K) = .232984893305

NPS_MAX (K) = .332054423003 NPS_MIN (K) = .099069529698

TEST DATA SHEET 10 (Sheet 2 of 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Compo- nent	Channel No.	V _b (V)	l _b (mA)	T _H (°C)	V _H	(V)	T _C (°C)	Vc	(V)	ı
			<u> </u>		Mean	Standard Deviation		Mean	Standard Deviation	
							į			
										/
	UCHSILLE 370/93 Q. Kapt	ار م								\
	-	9.94	194							
LO	Jan Hills	meth								
(370/99						X			
	Q Kapp	97	-			-/-				
			-							$/\!\!1$
										/
								7	/	İ
			-							
Mixer/							2012 033V			
Amps	All	9,94	242							
F Amps	All	7.95	26Y							
CEF 4	PRINT OU				RET /	NES	100			
)	K/10/ 00	/ /2-	חעו	וח א	207 (יין פי דיי	,, 3) ,			
						•	_ , ,	,		
o.:/	35642	9-/	•		Test Engi	neer:	11. X	T-		l



TEST DATA SHEET 10 (Sheet 4 of 40)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

NF (dB)					NPS (K)						
hannei No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail		
7	4.25	5,19			9.08						
		5.12									
		5,13									
		\ /,									
		\bigvee									
						·					
		$\sqrt{}$									
	5,20		5.15	P (.00			/			
*				*				Pass = P,	Fail = F		
-קע	S 15 N	OT REQ	UIRED ;	FOR TH	IS RECE	IVER SI	HELF ((Ai-1)	,		
+ NIc -	/26	-1499	- /			2	l H				
	دی/	01	- /		Test Engine	er:	rinxy				

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FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH7, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_T	rest	TEST TEM	F VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM T	rest	296.85	-1.02948297	.00039771		
2	COLD T	rest	79.15	79722153	.00059581	5.19009498	.33151222
3	WARM T	EST	296.85	-1.03051066	.00045510		
4	COLD T	EST	79.15	79435370	.00050459	5.12169233	.38450239
5	WARM T	EST	296.85	-1.03126437	.00056483		
6	COLD T	EST	79.15	79521768	.00051512	5.12693375	.49308406
7	WARM T	EST	0.00	0.00000000	0.00000000		
8	COLD T	EST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM T	EST	0.00	0.00000000	0.00000000		
10	COLD T	EST .	0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM T	EST	0.00	0.00000000	0.00000000		
12	COLD T	EST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM T	EST	0.00	0.00000000	9 .00 000000		
14	COLD T	EST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM T	EST	0.00	0.00000 00 0	0.00000000		
16	COLD T	EST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM T	EST	0.00	0.00000000	0.00000000		
18	COLD T	EST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM T	EST	0.00	Ø.90000000	0.00000000		
20	COLD T	EST	0.00	ଡ.ଡଡଡଡଡଡଡ	0.00000000	0.00000000	0.00000000

CH. 7 ,194.2 MHz MHz

NOISE FIGURE AVERAGE (dB) = 5.14634837074

NOISE POWER STABILITY (K) = .403032892262

NOISE POWER STABILITY DELTA (K) = .16157183642

 $NPS_MAX(K) = .493084059144$ $NPS_MIN(K) = .331512222724$

TEST DATA SHEET 10 (Sheet 4 of 10)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Te	est Setup Ver	rified: 7.	7 Signan	re	Basep	olate Tempe	rature (T _B)	30,3 °C			
	Compo- nent	Channel No.	V _P (Λ)	l _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation	
	LO	Mildel Q.Kap	15.1	515							
	Mixer/ Amps	All	+	242							
,	# SEE	PRINT		7EST		SHEE	T (NF	# NPS) ,		:
		13564 FO		<u>/</u>		Qual	ity Assuranc	7-hur :e:			



TEST DATA SHEET 10 (Sheet 5 of 10)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Sett	ıp Verified:_	7. 7. Signa	iture	Baseplat	e Temperatu	ите (Т _В)?	<u>0,3</u> •c		
		NF ((dB)			····	NPS (K)		
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
9	×- 3.9 5	3,99			¥ 0.08				
		3,99				,			
		3.99							
		\ /							
		/							
	5.20		3.99	P	.08)		1623,411,000		
- Control of			L	!				Pass = P,	Fail = F
# NPS	15 NO	T REQUI	RED FO.	R THIS	RECEI	VEK SH	AF (A1	-1).	
							, ,	<i>,</i> ,	
Part No.:_	1356	429 -	/		Test Engine	er:	Thek	ty	
Serial No	.:	F01.			Quality Ass				
					Date: 5	1/10/9	\$		
L		<u> </u>							

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FOR REFERENCE GREY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH9, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	295.85	90468054	.00018266		
2	COLD TEST	79.15	63643692	.00014013	3.99355441	.03336758
3	WARM TEST	296.85	90288809	.00024433		
4	COLD TEST	79.15	63481614	.00015085	3.98766641	.13625313
5	WARM TEST	296.85	90147281	.00020702		
6	COLD TEST	79.15	63422124	.00016061	3.99422579	.08599494
7	WARM TEST	0.00	0.00000000	0.00000000		
8	COLD TEST	0.00	0.00000000	Ø. ØØØØØØØ Ø	0.00000000	ଡ.ଡଡଡଡଡଡଡ
9	WARM TEST	0.00	0.00000000	0.00000000		
10	COLD TEST	0.00	0.00000000	0.00000000	Ø.ØØØØØØØØ	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	0.00000000	0.0000000	0.00000000	Ø.00 0000 00
13	WARM TEST	0.00	0.00000000	0.00000000		
14	COLD TEST	0.00	0.00000000	0.00000000	0.0 0000000	ଡ.ଡଡଡଡଡଡ
15	WARM TEST	0.00	0.00000000	0.00000000	~~~~~	
16	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000		
18	COLD TEST	0.00	0.00000000	c.00000000	0.00000000	0.00000000
19	WARM TEST	0.00	0.00000000	0.00000000		
20	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
	0022 /00.					

CH. 9 ,156.6 MHz MHz

NOISE FIGURE AVERAGE (dB) = 3.99181653425

NOISE POWER STABILITY (K) = .0855385496072

NOISE POWER STABILITY DELTA (K) = .102885546323

 $NPS_MAX(K) = .13625312631$ $NPS_MIN(K) = .0333675799866$

Test Setup V			and Nois	e Power Sta	bility Test	Data (Parag	alilling 9 9/9 18 12 (13.5.4) (1 130.3 ° (1	A1-1)	AE-26092/6.A 15 Sep 97
Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C	(V) Standard Deviation
LO	10 Edulos	15.1 Wysto	515			,			
Mixer/ Amps IF Amps	Ali Ali		242						
* SEE / Part No.:/ Serial No.:/	PRINT 0	UT 7	264 TEST	- Prince / Prince	· Test En	gineer: Assurance:	The). L	



TEST DATA SHEET 10 (Sheet 6 of 10)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

		NF ((dB)		NPS (K)						
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail		
10	-3.95	4.06			X-0-12						
		4.05									
		4.05									
		7									
	5.20		4.05	P	0,12		233333				
		SOUTH MARKE	<u> </u>				1	Pass = P,	Fail = F		
AN C	5 15 N	ot REQ	UIRED	FOR TI	415 RE	CEIVER	SHELF	(AI-1) .		
	•										
Part No.:	1356	429-	/		Test Engine	er: <u> </u>	into				
Serial No.	.: <i>/</i>	-01			Quality Ass	יוודימוורפי					

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH10, NF & NPS TEST DATA , PLO #1 4/10/98

SEQ	TEMP_TE	EST	TEST TEM	P VOLTAGE	STD_DEV	NF (dB)	NFS(K)
1	WARM TE	EST	296.85	-1.00213999	.00066615		
2	COLD TE	EST	79.15	70932747	.00026312	4.05787910	.44881828
3	WARM TE	ST	2 9 6.85	99775224	.00030324		
4	COLD TE	ST	79.15	70545125	.00023468	4.04630945	.08485841
5	WARM TE	ST	296.85	99626440	.00034084		
8	COLD TE	ST	79.15	70490515	.00025556	4.05391318	.14457499
7	WARM TE	ST	0.00	0.00000000	Ø. 00000 000		~
8	COLD TE	ST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM TE	ST	0.00	0.00000000	0.00000000		
10	COLD TE	ST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM TE	ST	0.00	0.0000000	0.00000000		
12	COLD TE	ST	0.00	0.00000000	0.00000000	0.00000000	0.000000000
13	WARM TE	ST	0.00	0.00000000	0.00000000		
14	COLD TE	ST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM TE	ST	0.00	0.00000000	Ø.00000000		
16	COLD TE	ST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TE	ST	0.00	0.00000000	0.00000000		
18	COLD TE	ST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM TE	ST	0.00	0.00000000	0.00000000		
20	COLD TE	ST	0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 10 ,76.4 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.05270322917

NOISE POWER STABILITY (K) = .226016561076

NOISE POWER STABILITY DELTA (K) = .363757869456

 $NPS_MAX (K) = .448616282273 NPS_MIN (K) = .084858412817$

TEST DATA SHEET 10 (Sheet-4 of 10)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

ompo- nent	Channel No.	Λ ^p (Λ)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation
LO	11 8	15.1	515		Mean	Deviation			· ·
Mixer/ Amps	All	9,94	4242						
IF Amps	All	7.95	264						
	PRINT 1356			DATA 			The	4 6	



(EST DATA SHEET 10 (Sheet Fof 10) Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

. Test Sett	up Verified:_	7. 2. Sign	ature	Basepla	te Temperati	ure (T _B)	<i>0.3</i> •c		
		NF	(dB)				NPS (K)		
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
11	3.95	4.30			0.12				
		4.28							
		4.28							
		/							
		\. /							
		X							
	·								
	X				_ *				
	5, Z.D		4.29	p (12			***************************************	
The state of the s		Arrian Samour						Pass = P,	Fail = F
D NPS	15 NO	T READ	VIKED F	OR TH	IS REC	CEIVER	SHEL	F (A1-	1).
Part No.:_	1356	429-	/		Test Engine	er: >	heh	<u></u>	
	FO				Quality Assi				
					Date:	4/10/	98	· · · · · · · · · · · · · · · · · · ·	
 				, A-	26 22 40 ************************************	(30°)	Q. Ka	ppor	

FOR REFERENCE UNLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH11, NF & NPS TEST DATA, PL0 #1 4/10/98

SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.85	96030439	.00054056		
ż	COLD TEST	79.15	69506250	.00023202	4.30436318	.37750980
3	WARM TEST	296.85	95736057	.00033612		
4	COLD TEST	79.15	69170998	.00024959	4.28416679	.14846571
5	WARM TEST	296.85	95627548	.00027749		
Б	COLD TEST	79.15	69071242	.00021317	4.28064198	.04471308
7	WARM TEST	0.00	0.00000000	0.00 0000 00		
8	COLD TEST	0.00	0.00000000	Ø. ØØØØØØØØ	0.00000000	ଡ.୭୭୭୭୭୭୭
9	WARM TEST	0.00	0.00000000	0.00000000		
10	COLD TEST	0.00	0.00000000	0.00000000	Ø.ØØØØØØØØ	ଡ.ଡଡଡଡଡଡଡ
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	0.00000000	0.00000000	0. 00000000	0.00000000
13	WARM TEST	0.00	0.00000000	0.00000000		
14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.000 0000 0
15	WARM TEST	0.00	Ø. 0000000 0	0.00000000		
16	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	ଉ.ଉଉଉଉଉଉଉ
17	WARM TEST	0.00	0.00000000	0.00000000		
18	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM TEST	0.00	Ø.9 <mark>00</mark> 90000	0.00000000		
20	COLD TEST	0.00	0.000000000	0.00000000	0.00000000	0.00000000

CH. 11 ,69.3 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.28973656129

NOISE POWER STABILITY (K) = .19022953099

NOISE POWER STABILITY DELTA (K) = .332796726093

 $NPS_MAX(K) = .377509303345$ $NPS_MIN(K) = .0447130772522$

TEST DATA SHEET 10 (Sheet 7 of 10)

Compo- nent	Channel No.	ν _b (ν)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standa Deviati
									/
							•		
	12-								
LO	12-	15.1	513						
·									
Mixer/ Amps	All	9,94	242						
IF Amps	All .	7.95							
+ SEE	PRINT	OUT	TEST	DAT.	A SHE	ET (N)	C & NP.	(s),	
							5 / 4		
art No.:	13564	429-	/		· Test E	ingineer:	Kel	~~	



TEST DATA SHEET 10 (Sheet & of 40)

		Noise Figur	e and Noise	Power Stabil	ity Test Data	(Paragraph	3.3.4) (A1-1) 		-
Test Set	up Verified:_	7. 7.1 Sign	ature	Basepla	te Temperatu	re (T _B) <u>ನೆ</u>	<u>7,3</u> ℃			
		NF	(dB)		NPS (K)					
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail	
12	3.95	4.27			-0.18 A)	K				
		4,29								
		4,33								
		\setminus \setminus ,								
										- ·
		$\left \cdot \right $								(
	5.20		4.30	P).18					(
	*				*		1	Pass = P,	Fail = F	
*) NP.	S 15 N	OT REC	RUIRED	FOK ,	THIS R	ECEIVER	R SHELP	(AI-1).	
	.	: 1 c a C-				~	1 1	-		
Part No.:_		6429 -	• /		Test Engine	er:	MS			
Serial No.	: F	0/			Quality Assu					
					Date: 4	6/10/9	8			

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH12, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_	TEST	TEST TEM	IP VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM	TEST	296.85	-1.08484892	.00056650		
2	COLD	TEST	79.15	78261112	.00037922	4.26657007	.33106705
3	WARM	TEST	296.85	-1.08201259	.00046324		
4	COLD	TEST	79.15	78209622	.00039447	4.28888189	.09543434
5	WARM	TEST	296.85	-1.08186547	.00047615		
6	COLD	TEST	79.15	78479355	.00038609	4.33003424	.05230684
7	WARM	TEST	0.00	0.00000000	0.00000000		
8	COLD	TEST	0.00	0.00000000	Q.000000000	0.00000000	0.00000000
9	WARM	TEST	. 0.00	0.00000000	0.00000000		
10	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM	TEST	0.00	0.00000000	0.00000000		
12	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM	TEST	0.00	0.00000000	0.00000000		
14	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM	TEST	0.00	0.00000000	0.00000000		
16	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM	TEST	0.00	0.00000000	0.00000000		
18	COLD	TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM	TEST	0.00	0.00000000	0.00000000		
20	COLD	TEST	0.00	0.00000000	Ø.00000000	0.00000000	0.00000000

CH. 12 ,30.6 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.29524167611

NOISE POWER STABILITY (K) = .159602740607

NOISE POWER STABILITY DELTA (K) = .27876020977!

 $NPS_MAX (K) = .331067045916 NPS_MIN (K) = .0523068371446$

TEST DATA SHEET 10 (Sheet Pof 10) d Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Setup Veri		7. Signati					<u>30.3</u> °C		
Compo- nent	Channel No.	V _b (V)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation
LO	¥13 €.	15.1	515						
Mixer/ Amps IF Amps ** SEE /		7.95 0UT					NF E/N)	0 1 -	
Serial No.:					-	ty Assuranc	e:		



TEST DATA SHEET 10 (Sheet-9-of 10)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Sen	up Verified:_	7. 7. Sign		Baseplat	e Temperati	ие (Тв)	۰ <u>۰ کـر</u>		·
		NF	(dB)				NPS (K)		
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
43	7.70	4.37			70,13				
·		4.36							
		4.34							
:		$-\sqrt{\frac{1}{\epsilon}}$							
	:	\\							
	~	$\langle \hspace{0.1cm} \rangle$							
	5.2		4.35	PLUE).24				
J			· · · · · · · · · · · · · · · · · · ·	7				Pass = P,	Fail = F
¥) NP.	S 15 NO	OT REQU	IRED F	FOR TH	is REC	CEIVER .	SHELF	(A1-1)) ,
								,	
Part No.:_	1356	429-1			Test Engine	er:	Lett	7	
Serial No.:	FO				Quality Assi	urance:			
					Date:	4/10/	198		
					X ((S)			

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FOR REFERENCE UNLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH13, NF & NPS TEST DATA, PLO #1 4/10/98

SEO	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.85	91764773	.00063447		
2	COLD TEST	79.15	66779169	.00039226	4.36709789	.24253276
3	WARM TEST	296.85	91580314	.00047484		
4	COLD TEST	79.15	66583840	.00035450	4.35637830	.27304120
5	WARM TEST	296.85	91518233	.00048498		
6	COLD TEST	79.15	66440753	.00045507	4.33923444	.25768515
7	WARM TEST	0.00	0.00000000	0.00000000		
8	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM TEST	0.00	0.00000000	0.00000000		
10	COLD TEST	. 0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	Ø.00000000	0.00000000	0.00000000	0.00000000
13	WARM TEST	0.00	0.00000000	0.0000000		
14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM TEST	0.00	0.00000000	0.00000000		
16	COLD TEST	0.00	0.00000000	0.00000000	Ø.ØØØØØØØ	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000		
18	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	Ø.ØØØØØØØ
19	WARM TEST	0.00	0.00000000	0.00000000		
20	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
L. W	0000 1001					

CH. 13 ,15.7 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.35425203408

NOISE POWER STABILITY (K) = .257753037118

NOISE POWER STABILITY DELTA (K) = .0305084369291

 $NPS_MAX(K) = .273041200889$ $NPS_MIN(K) = .24253276396$

TEST DATA SHEET 10 (Sheet Y of 18)

Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A1-1)

Test Setup Ve	erified:	? 7mg Signat) ure	Basej	plate Temp	erature (T _B)	<u>30,3 °</u> c	· · · · · · · · · · · · · · · · · · ·		
Compo- nent	Channel No.	ν _P (Λ)	I _b (mA)	T _H (°C)	V _H Mean	(V) Standard Deviation	T _C (°C)	V _C Mean	(V) Standard Deviation	
LO	*45	15.1	515							
Mixer/ Amps	Ali		242 264							
# SEE Part No.: Serial No.:	/3564	29-	TEST		· Test E	ngineer: y Assurance	That	Sty.		

17 18

TEST DATA SHEET 10 (Sheet 10 of 10)

		Noise Figu	re and Noise	Power Stabi	lity Test Dat	a (Paragraph	3.5.4) (A1-1)		(
Test Set	up Verified:_) 71 Sign	nature	Basepla	te Temperati	ire (T _B) _ う	<i>0.3</i> •c			
		NF	(dB)		NPS (K)					
Channel No.	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail	1
13	3.05	4.35			X0.24					100
X	Ж	4.37								a la uvan
		4.32								
		\setminus /								- I - i - i - i - i - i - i - i - i - i
		\								
		\bigvee								
										(
						7				
	5.24		4.35	P	.36					Æ)
	/ //				<i>A</i>		Р	ass = P, I	Fail = F	
(k) NPS	15 N	OT REG	COIRED	FOR TH	tis REC	EIVER	-SHEF ((A1-1)) ,	
			/	ı	Test Enginee	r:_ <u> </u>	St			
Serial No.:	FOI				Quality Assur	•	-	·····		
				I	Date: 4	110/9	8	<u> </u>		

A-22 ALR 30 TO R. Keppey

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A1-1, S/N F01, CH14, NF & NPS TEST DATA, PLO #1 4/10/98

SEQ	TEMP_TEST	TEST TEM	P VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	296.85	-1.08221498	.00136291		
2	COLD TEST	79.15	78623337	.00084414	4.34755681	.59501616
3	WARM TEST	296.85	-1.07800028	.00105039		
4	COLD TEST	79.15	78475781	.00079801	4.37119160	.22321948
5	WARM TEST	296.85	-1.07641260	.00108267		
8	COLD TEST	79.15	77993727	.00080669	4.31670445	.09958354
7	WARM TEST	0.00	0.00000000	0.00000000		
8	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
9	WARM TEST	0.00	0.00 000 000	0.00000000		
10	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
11	WARM TEST	0.00	0.00000000	0.00000000		
12	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
13	WARM TEST	0.00	0.00000000	0.00000000		
14	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
15	WARM TEST	0.00	0.00000000	0.00000000		
16	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
17	WARM TEST	0.00	0.00000000	0.00000000		
18	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000
19	WARM TEST	0.00	0.00000000	0.00000000	~~~~~~	
20	COLD TEST	0.00	0.00000000	0.00000000	0.00000000	0.00000000

CH. 14 ,5.9 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.3452082378

NOISE POWER STABILITY (K) = .305606383341

NOISE POWER STABILITY DELTA (K) = .496432622252

 $NPS_MAX(K) = .595016157406$ $NPS_MIN(K) = .0985835351544$

TEST DATA SHEET 16 Temperature Sensor and Thermistor Test Data (Paragraph 3.6.1) (A1-1)

Test Setup Verified: 7. 15. Baseplate Temperature (T_B) 23.9 °C
Signature

	Austine			
Reference Designation	Specification	Measured V	alue	Pass/Fail
RT 40	2200 ± 100 Ω	2174	Ω	720/12 2174 Pass
· RT 45	2200 ± 100 Ω	2173	Ω	Pass
- RT 11	2200 ± 100 Ω	2172	Ω	Pass
RT 13	$2200 \pm 100 \Omega$	2174	Ω	Pass
RT 15	2200 ± 100 Ω	2175	-Ω	Pass
RT 14	2200 ± 100 Ω	2175	Ω	Pass
RT20	2200 ± 100 Ω	2173	Ω	Pass
RT 21	2200 ± 100 Ω	2172	Ω	Pass
RT 23	2200 ± 100 Ω	2172	Ω	Pall
RT 24 ·	2200 ± 100 Ω	2/72	Ω	Pass
RT 25	2200 ± 100 Ω	2173	Ω	Pass
P. 23	2200 ± 100 Ω	2174	Ω	Padd
RT 27	2200 ± 100 Ω	2175	Ω	Pass
RT 28	2200 ± 100 Ω	2175	Ω	Pass
RT 29	2200 ± 100 Ω	2/77	Ω	Pass
RT 30	2200 ± 100 Ω	2173 7.2	-) Ω	Pass
RT 31	2200 ± 100 Ω	2177	Ω	Pass
RT 34	2200 ± 100 Ω	2174	Ω	Pais
TB 56	3000 ± 100 Ω	2994	Ω	Pass
TB 57	3000 ± 100 Ω	2997	Ω	Pass
# тв 53	4.1 – 4.6 V	2.1 my	/ V	Fail

, Re Test of TI	92 003182 oper No. 8040
* Measured Value	9R 003182 oper No. 8040 ed: 4.36 Volts / Pass /21/98 (13)
7. Vind. 05	1/21/98 (15) 63
,	Za

Pass = P, Fail = F

Part No.: 1356 429 - 1	Test Engineer:				
£a /	EN 12 (124)				
Serial No.:	Quality Assurance:				



TEST DATA SHEET 20 Survival Heater and Thermal Switch Test Data (Paragraph 3.6.3) (A1-1)

Test Setup Verified: 4. Yrinh	Baseplate Temperature (T _B) 22.9 °C
Signatur	

	Open Switch		Closed Switch			
Reference Designation	>10 MΩ	Pass/Fail	Specification	Measured Value	Pass/Fail	
HR1/TS1	>50,00	P		31.3.2	P	
	>5049	P	. 25 - 35 Ω	31.22	P	
HR2/TS2	750AQ	P		31.12	P	
	750MI	P		31,25	P	

Pass = P, Fail = F

Part No.: 1356429-1	Test Engineer:				
Serial No.: FO/	Quality Assurance:				
	Date: 5/20/98				

A-41 CON P. Kappo

TEST DATA SHEET 23 (Sheet 1 of 3) Bias Voltage Verification Test Data (Paragraph 3.6.4) (A1-1)

Test Setup Verified: 7. Signature	Baseplate Temperature (T _B) 30.3°C
-----------------------------------	--

Reference Designation	Specification	Measured Value (V)	Pass/Fail	
Mixer/IF AMP Ch 6, 7, 15, 9-14	+10 ±0.1	9.94	P	
DRO Ch 7	+10 ±0.1	9.194	P	
DRO Ch 15	+15±0.15	14.89	P	
PLO +15	+15±0.15	15.10	P	
PLO -15	-15 ±0.15	15.10	P	
IF AMP Ch 9-14	+8 ±0.08	7,95	P	

Part No.: 1356429-1	Test Engineer:
Serial No.: FO /	Quality Assurance:
	Date: 4/10/98

*(R 30 79 5 1000) A. Kappon

ADDENDUM / AMENDMENT A TO REPORT 11155

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			\smile

AMENDMENT A

After vibration test on "Y" axis, an LPT was performed on instrument. Data review indicated Channel 7 radiometric counts were in the 8-9000 range. Normal range is 12,500-20,500. TAR #4316 was generated. Mixer-amplifier P/N 1331562-17 S/N 7A07 and DRO P/N 1336610-7, S/N 85022 were removed. Mixer-amplifier P/N 1331562-17 S/N 7A27 and DRO P/N 1336610-7 S/N 85021 were installed. Vibration tests were completed and instrument passed all testing. (FAR #133)

Channel 7 LO

DRO (P/N: 1336610-7, S/N: 85022)

S/N: 85022 Was Replaced With DRO (P/N: 1336610-7, S/N: 85021)

TEST DATA SHEET 7.2 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET N/A FINAL DATA SET

LITTON TYPE LS E 9036 AJ /A	•	AESD 1336610
SERIAL NUMBER: 85021	QUAL TEST ~/A	ACCEPT TEST
Basic Electrical Test; Ref. Test Para. 5.2.2		
SPECIFICATION	MEASUREMENT AT Tron	ı±1℃ LIMIT
Measurement at Vop=10 VDC		
Temperature	2 °C	Table IIIB
Input Voltage	/o VDC	10.0 ± 0.2 VDC
Input Current	/84 mA	Table IIIB
Input Power, P _{diss}	7.84 W DC	P _{diss} max
Frequency, f _{Tnom}	54. 9 4020 GHz	Table IIIB
RF Output Power, P _{Tnom}	/2. Ø dBm	12 to 17 dBm
Frequency Setting Accuracy,	.20 MHz	
$\Delta f_{S} (= f_{Tnom} - F_{o})$	<u>-</u>	
Frequency and RF Output Power Variation W Measurement at 9.5 VDC or at VDC		; ,
Temperature	2 Z°C	Table IIIB
out Voltage	9.5 VDC	9.5 VDC or Para. 5.2.3.2
.put Current	/82 mA	Table IIIB
Frequency, f _{mess}	54. 940 18 GHz	Table IIIB
RF Output Power, Pmess	/2.0 dBm	12 to 17 dBm
Maria de la Campa de la Campa		
Measurement at 10.5 VDC or at /o.s VI		T.U. IIII
Temperature	°C /0∙S VDC	Table IIIB
Input Voltage Input Current	/0.5 VDC /22 mA	10.5 VDC or Para. 5.2.3.3 Table IIIB
Frequency, f _{mess}	\$4.94017 GHz	Table IIIB
RF Output Power, P _{meas}	/2.0 dBm	12 to 17 dBm
Cuspus I Ower, I meas		12 10 17 10 11
Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Ti}$	nom	-
Δf _V at 9.5 VDC or at <u>9.5</u> VDC	= <u>~0.02</u> MH	2
Δf _V at 10.5 VDC or at 10.5 VDC	= <u>-0.03</u> MH	z
Calculate RF Output Power Variation, $\Delta P_V = I$	P _{meas} - P _{Tnom}	
ΔP _v at 9.5 VDC or at <u>9.5</u> VDC	= <u>→</u> dB	
ΔP_V at 10.5 VDC or at 10.5 VDC	= <u>~</u> dB	
Ac	cept Reject	
itton QA	Date JUL 14 1998	
CODE IDENT NO. SIZE	NUMBER 1	REV SHEET 38 OF 68
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TEST DATA SHEET 7.3 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET // FINAL DATA SET /

LITTON TYPE LS <u>e 903</u>	G AJ/A	-	AESD 1336610-	7
SERIAL NUMBER: &	1021	QUAL TEST <u>~/A</u>	ACCEPT TEST _	
Temperature Testing at T=10	0°C, Ref. Test	Para. 5.2.5.1		
SPECIFICATION	MEA	SUREMENT AT T=10	°±1°C LIMIT	
Measurement at Vop=10 VD	OC			
Temperature		/o°C	$10^{\circ} \pm 1^{\circ}C$	
Input Voltage		10 VDC	10.0 ± 0.2	VDC
Input Current		/84 mA	Table IIIB	
Input Power, P _{diss}		1.84 WDC		
Frequency, f _{10°C}		54.94009 GHz	Table IIIB	
RF Output Power, P _{10°C}	•	/2.0 dBm	12 to 17 dI	
Frequency and RF Output Po	war Variation		t Para 5 7 5 1	•
Measurement at 9.5 VDC or			t I ald J.L.J.I	
Temperature		10 ℃	Table IIIB	
nut Voltage		9.5 VDC		r Para. 5.2.3.2
out Current		/8 / mA	Table IIIB	
rrequency, f _{mess}		54.940 04 GHz	Table IIIB	
RF Output Power, P _{meas}		/2.0 dBm	12 to 17 dE	3m
Measurement at 10.5 VDC o	rat 10 C	VDC		
Temperature	1 at 70.3	, o .c	Table IIIB	
Input Voltage		9.5 VDC		or Para. 5.2.3.3
Input Current		//2 mA	Table IIIB	01 1 414. 5.2.5.5
Frequency, f _{mess}		54.94004 GHz	Table IIIB	
RF Output Power, P _{meas}	1.•a ⁻¹	/2.0 dBm	12 to 17 dE	Bm
_		•		
Calculate Frequency Variation			\ <i>G</i> !!	
Δf_V at 9.5 VDC or at $\frac{9.5}{10.5}$			~	
Δf_V at 10.5 VDC or at _/6.			MHz	
Δf_T at 10.0 VDC (= $f_{10^{\circ}C}$ - f_{Tno}	m)	= <u>- 0.11</u>	MHz	•
Calculate RF Output Power	Variation, ΔP _v	= P _{meas} - P _{10°C} :		
ΔP _V at 9.5 VDC or at 9.5			dB	
ΔP_V at 10.5 VDC or at 10.5			dB	
ΔP_T at 10.0 VDC (= $P_{10^{\circ}C}$ - P_{T_1}			dB	
		Accent	Reject	
est Performed by	> <		29. 58	_
itton Q.A.	72		1 4 1998 4	
Thought.	/	Date	- A 1000 .	
CODE IDENT NO.	SIZE	NUMBER	REV SHEET 39	OF 68
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TEST DATA SHEET 7.4 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET 1/2 FINAL DATA SET

INITIAL DATA SE	I NA PINAL DA	IASEI
LITTON TYPE LS <u>E 9036 AJ / A</u> SERIAL NUMBER: 85021	QUAL TEST ~/A	AESD 1336610- 7 ACCEPT TEST
Temperature Extreme Testing at Tmin, R	ef. Test Para. 5.2.5.2	
SPECIFICATION	MEASUREMENT AT T	min ±1°C LIMIT
Measurement at Vop=10 VDC		
Temperature	°C	Table IIIB
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	/ <i>83</i> mA	Table IIIB
Input Power, P _{diss}	1.83 W DC	Pdiss max
Frequency, f _{Tmin}	54. 940 13 GHz	Table IIIB
RF Output Power, P _{Tmin}	/2./ dBm	12 to 17 dBm
Frequency and RF Output Power Variation Measurement at 9.5 VDC or at		ara 5.2.5.2
Temperature	°C	Table IIIB
out Voltage	9.5 VDC	9.5 VDC or Para 5.2.3.2
iput Voltage	181 mA	Table IIIB
Frequency, f _{meas}	54.94010 GHz	Table IIIB
RF Output Power, P _{meas}	(2.1 dBm	12 to 17 dBm
Kr Output Fower, Fmeas	UDIII	12 to 17 dom
Measurement at 10.5 VDC or at 10.5	VDC	
Temperature	°C	Table IIIB
Input Voltage	/o.5 VDC	10.5 VDC or Para 5.2.3.3
Input Current	182 mA	Table IIIB
Frequency, f _{meas}	SU. TUO 10 GHZ	Table IIIB
RF Output Power, P _{meas}	/2./ dBm	12 to 17 dBm
Rr Output Fower, Pmeas	, <u>, , , , , , , , , , , , , , , , , , </u>	-
Calculate Frequency Variation, $\Delta f_V = f_{meas}$		
Δf_V at 9.5 VDC or at 9.5 VDC		<u>3</u> MHz
Δf_V at 10.5 VDC or at 10.5 VDC		3 MHz
Δf_T at 10.0 VDC (= f_{Tmin} - f_{Tnom})	-0.0	7_MHz
Calculate RF Output Power Variation, ΔP	v = P P:	
ΔP _V at 9.5 VDC or at $\frac{9}{2}$ VDC		dB
ΔP_{v} at 10.5 VDC or at $\langle o, \zeta \rangle$ VDC		dB
ΔP_T at 10.0 VDC (= P_{Tmin} - P_{Tnom})	= 0./	dB
AFT at 10.0 VDC (-FTmin -FTnom)		
Acc	ept Reject	
fest Performed by	Date 6-29-	98
Litton O.A.	***************************************	198 4
1621	, 006-3-	
CODE IDENT NO.	NUMBER	REV SHEET 40 OF 68
56348 A	1300823	B3
LITTON / SOLID STATE DIV	ISION / 3251 OLCOTT ST	/ SANTA CLARA, CA 95054

TEST DATA SHEET 7.5 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET W/A FINAL DATA SET

INITIAL DATA	SEI W/A INVAL DITTIBLE _	
LITTON TYPE LSE 9036 AJ/A SERIAL NUMBER: 85021	/	D 1336610
SERIAL NOWIDER	_ <0.12 1201	
Temperature Testing at T=30°C, Ref. Te	est Para. 5.2.5.3	
SPECIFICATION	MEASUREMENT AT T=30° ±1°	<u>LIMIT</u>
Measurement at Vop=10 VDC		200 - 100
Temperature	3∘°С	30° ± 1°C
Input Voltage	VDC	$10.0 \pm 0.2 \text{ VDC}$
Input Current	<i>184</i> mA	Table IIIB
Input Power, P _{diss}	W DC	Pdiss max
Frequency, f _{30°C}	54.94031 GHz	Table IIIB
RF Output Power, P _{30°C}		12 to 17 dBm
Frequency and RF Output Power Variati	ion With Voltage, Ref. Test Para 5.2.5.3	· 3
Measurement at 9.5 VDC or at	_ VDC	
Temperature	<u>3</u> ₀°C	Table IIIB
put Voltage	9.5 VDC	9.5 VDC or Para. 5.2.3.2
aput Current	/82_mA	Table IIIB
Frequency, f _{mess}	54.940 29 GHz	Table IIIB
RF Output Power, P _{meas}	/2.0 dBm	12 to 17 dBm
•		
Measurement at 10.5 VDC or at 10.5	VDC	T II. IIID
Temperature	<u> </u>	Table IIIB
Input Voltage	VDC	10.5 VDC or Para. 5.2.3.3
Input Current		Table IIIB
Frequency, f _{meas}	54.940 28 GHz	Table IIIB
RF Output Power, P _{meas.}	dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_m$	neas - f _{30°C} :	-
My at 7.5 1 Do of at	DC =	
Δf_V at 10.5 VDC or at 10.5 VI	$DC = \frac{-0.03}{MHz}$	
Δf_T at 10.0 VDC (= $f_{30^{\circ}C}$ - f_{Tnom})	= <u>0.//</u> MHz	•
Calculate RF Output Power Variation,	$\Delta P_{V} = P_{\text{meas}} - P_{30^{\circ}\text{C}}$:	
ΔP_{V} at 9.5 VDC or at 9.5 VI	$DC = \underline{\qquad} dB$	
ΔP _V at 10.5 VDC or at 6.5	$DC = \underline{\qquad \qquad} dB$	
ΔP_{T} at 10.0 VDC (= $P_{30^{\circ}\text{C}}$ - $P_{T_{nom}}$)	= <u></u> dB	
	Accept Rej	ect
Fest Performed by	Date <u>6-29-98</u>	
Litton Q.A.	Date JUL 14 1998	
CODE IDENT NO. SIZE	NUMBER REV	SHEET 41 OF 68
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TEST DATA SHEET 7.6 FUNCTIONAL PERFORMANCE TESTS INITIAL DATA SET //A FINAL DATA SET /

		
LITTON TYPE LS E 9036 AJ A SERIAL NUMBER: 85021	(AESD 1336610 ACCEPT TEST ✓
Temperature Extreme Testing at Tmax, Ref.		
SPECIFICATION	MEASUREMENT AT Tmax :	±1°C LIMIT
Measurement at Vop=10 VDC		
remperature	44°C	Table IIIB
nput Voltage	/o VDC	$10.0 \pm 0.2 \text{ VDC}$
input Current	/8-4 mA	Table IIIB
input Power, P _{diss}	1.84 W DC	Pdiss max
Frequency, f _{Tmax}	54.94092 GHz	Table IIIB
RF Output Power, P _{Tmax}	/2.0 dBm	12 to 17 dBm
. Cospection of the transfer		
Frequency and RF Output Power Variation '	With Voltage, Ref. Test Para 5.2	2.5.4
Measurement at 9.5 VDC or at 9 . 5 V	DC	
Temperature Temperature	<u>4,4</u>	Table IIIB
nput Voltage	<u>9.5</u> VDC	9.5 VDC or Para 5.2.3.2
put Current	/82,mA	Table IIIB
requency, f _{meas}	54.94090 GHz	Table IIIB
RF Output Power, P _{meas}		12 to 17 dBm
46	/DC	
Measurement at 10.5 VDC or at	νDC 44°C	Table IIID
Temperature		Table IIIB
Input Voltage	/0.5 VDC	10.5 VDC or Para 5.2.3.3
input Current	/83 mA	Table IIIB
Frequency, f _{meas}	54.946 89 GHz	Table IIIB
RF Output Power, P _{meas}	/2.0 dBm	12 to 17 dBm
Calculate Frequency Variation, $\Delta f_V = f_{meas}$ -	f:	· -
Δf_V at 9.5 VDC or at 7.5 VDC =		
Δf_V at 10.5 VDC or at $\frac{10.5}{}$ VDC =		
$\Delta f_{T} \text{ at } 10.0 \text{V } (=f_{T_{max}} - f_{T_{nom}}) =$	= 0.72 MHz	
Calculate RF Output Power Variation, ΔP_V =	= P _{meas} - P _{Tnom} :	
ΔP_V at 9.5 VDC or at 9.5 VDC =		
ΔP_V at 10.5 VDC or at $\sqrt{0.5}$ VDC =	= <u>-</u> dB	
ΔP_{T} at 10.0 VDC (= P_{Tmax} - P_{Tnom}) =	<u> </u>	
	,	
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est Performed by	Date <u>6-29-96</u>	_
itton Q.A.	Date	-
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CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 42 OF 68
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			` `

Channel 7 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-17, S/N: 7A07)

S/N: 7A07 Was Replaced With Mixer/Amplifier (P/N: 1331562-17, S/N: 7A27)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST: ATP PARAGRAPH 5.1.3

GAIN FLATNESS

SPEC. GAIN FLATNESS

(dB)ppK

(dB)ppK

0,50

A	(CC	15
\mathscr{T}	04	1.
$\ $	का	- }}
II	1	//

REJ

GAIN VERSUS VOLTAGE SENSITIVITY TEST: ATP PARAGRAPH 5.1.4

AMPLIFIER

GAIN

VOLTAGE

READING (dBm)

 $\Delta G/\Delta V$

SPEC.

 $\Delta G/\Delta V$

ACC RE

ECN CAMSU-1352

9.96 10.00 10.04 $\Delta Gv =$

70.94

71.03

71,12 dB 2,25

2.0

DATE ACC REJ

PART NO. 1331562-1765

SPACEK QA



SER NO.

7A27

TEST FAILURE:

TESTED BY:

FAILURE ANALYSIS NO.

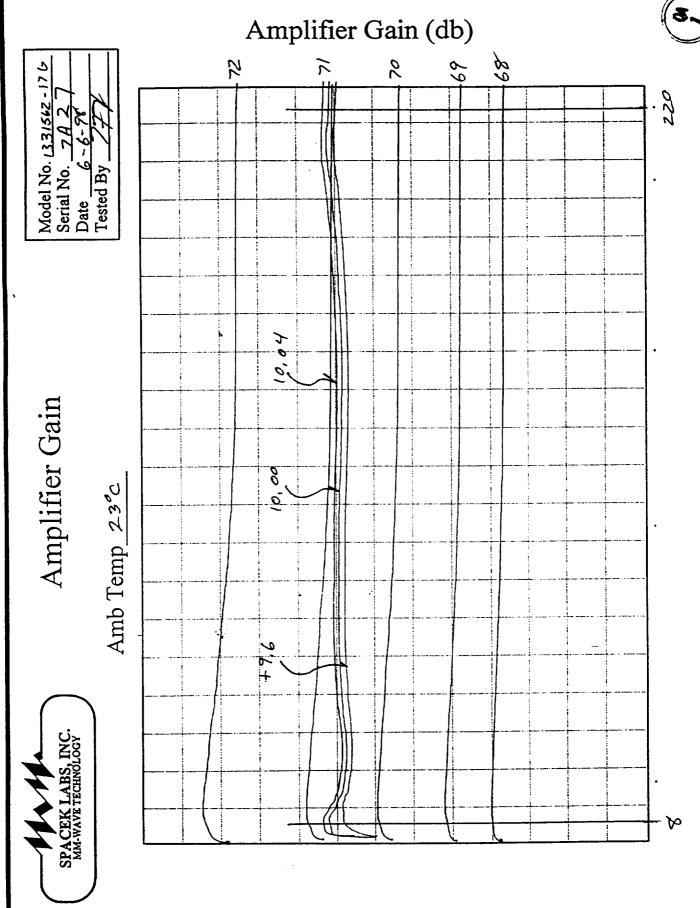
END DATE:

END TIME:

Spacek Labs, Inc. 212 E. Gutierrez St.

Santa Barbara, CA, 93101

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TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

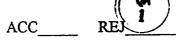
Nomin	al Temperature	Relat	ive Gain	Δ G /ΔΤ	SPEC	ACC	REJ
T1	- 6	GT1	71,83				1
				* 0.024	0.035dB/°C	M	1
T2	+8	GT2	71.50				
				. 0.024	0.020dB/°C		
T3	+28	Gтз	71,02			-	\ <u>\</u>
				* 0.020	0.035dB/°C	QA	
T4	+40	GT4	70,78			1	

ECN CAMSU-1352

* Perform the following calculations and record on the TDS

$$\Delta G_T = 1.05 \text{dB}$$

 $\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 = 1.63$ dB Spec 1.4dB



ECN CAMSU 1352

PART NO. <u>1331562-17</u> 6

SPACEK QA

6-19-98

SER NO. _____7A 27

TEST FAILURE:

DATE ACC REJ

TESTED BY: 777

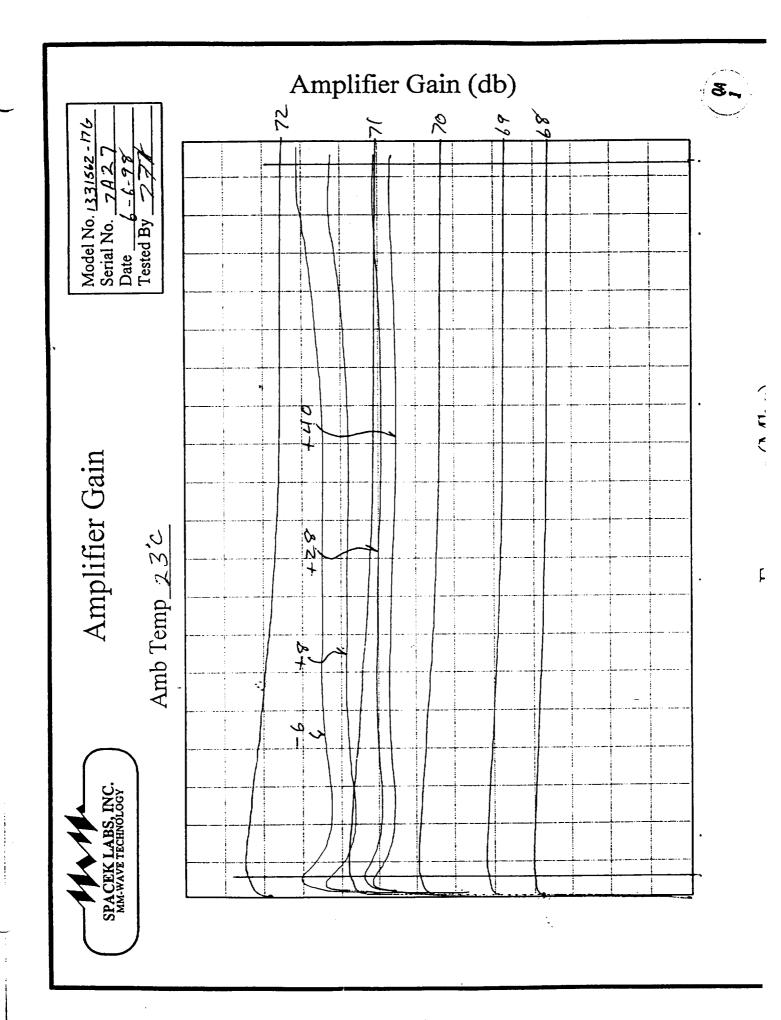
FAILURE ANALYSIS NO. _____

END DATE: 6-5-

Spacek Labs, Inc.

END TIME: /600

212 E. Gutierrez St. Santa Barbara, CA, 93101



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

n	٨	CLI	14
	м	24	- #

11 12 13 14 15 16 17 18 19 20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm) ACC RE
X X X X X X X X	10	-216	0.4	110 3~
X	20			
X X	50			
X X X X X X X X	100	- 2,7	0.3	1.0
X	150			
<u> </u>	_ 200	-2,6	0.4	110
X	400		<u> </u>	
X	500			
X	1000			
· X	1500			

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 6-5-98 AMBIENT ROOM TEMPERATURE °C: 23°C

AMPLIFIER	AMPLIFIER		
OUTPUT	OUTPUT		AMPLIFIER
POWER	POWER	Y FACTOR	NOISE
AMBIENT (dBm)	(-77 K)(dBm)	(dB)	FIGURE (dB)
-20,4		-	1.19
	-24.0	3,6	$l_{i}l_{j}$

Above data taken with Daden filter attached (except -19).

Intermediate test results for information only

PART NO. <u>1331562-[7</u>	SPACEK QA	DATE ACC REJ
SER NO. <u>7A27</u>	TEST FAILURE:	
TESTED BY:	FAILURE ANALYSI	S NO
END DATE: 5-6-9\$		
END TIME: 1600	Spacek Labs, 212 E. Gutie Santa Barbai	rrez St.

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 6-24-98AMBIENT ROOM TEMPERATURE °C: +21

UUT TEMP °C.	UUT CURRENT	MIXER- AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER- AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER- AMP. NOISE FIGURE (dB)	SPEC. MIXER- AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.4	-19.30	-21.40	2.10	2,9	3.8	(A)	
+8	43.4	-19.40	-21.50	2.10	2,9	3.8	CH	
+28	43.6	-19:70	-21.80	7.10	2.9	3.8	QI 1	
+40	43.6	-20,00	-22,00	2,00	3.1	300	QI .	
		<u>6.1</u> dB Sp to be taken with	-	-			REJ	

NEAT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

Date: <u>4-21-78</u> Ambient Room Temperature °C: <u>23</u>

Attach computer generated $NE \Delta T$ spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.046

Record Nps(K) O.O. for dash number from Aerojet specification AE-24869, Table II. Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

MPE

REI

PART NO. <u>1331562-17-6</u>	SPACEK QA	G-29-78 (ACC REJ
SER NO	TEST FAILURI	E:
TESTED BY:	FAILURE ANALY	SIS NO
END DATE: <u>4-25-98</u>		
END TIME: 1600	Spacek Lal 212 E. Gut Santa Bart	

CENTER FREQUENCY OF LOS

Channel No.	3	4	5	9	7	∞	9-14 *	15
Specification (GHz)	50.3	52.8	53.596	54.4	54.94	55.5	57.290344	89.0
Setting Accuracy (+/-GHz)	0.002	0.001	0.001	0.001	0.001	0.002	0.000086	0.03
Measured (GHz)	50.30038	52.80022	53.59677	54.40008	54.93996	55.50077	57.290340	88.987
							57.290329	

Measured for PLO No. 1 and No. 2.

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GAIN STABILITY AND GAIN COMPRESSION FOR MIXER/AMPLIFIERS AND IF AMPLIFIERS

		-21
)
)

GAIN-TEMPERATURE SENSITIVITY FOR MIXER/AMPLIFIERS AND IF AMPLIFIERS

Channel No.	3	4		9	7	∞	6	. 01	11	12	13	14	15
Specification (+/-dB/°C)	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.04	0.06	0.06	90.0	90.0	0.02
Measured (dB/°C)	-0.009	-0.013	-0.013	-0.017	-0.020	-0.011	-0.025	-0.025	-0.025	-0.025	-0.025	-0.025	-0.017
							+0.005	+0.005	+0.005,	+0.005,	+0.005.	+0.005,	
									-0.014	-0.014	-0.01	-0.02	
Total (dB/°C)	-0.009	-0.013	-0.013	-0.017	-0.020	-0.011	+0.005,	+0.005,	+0.005,	+0.005,	+0.005,	+0.005,	

5.

National Aeronautics and Space Administration	Report Docum	entation Pa	age	
1. Report No.	2. Government Accession No	D	3. Recipient's Catalog N	O.
Title and Subtitle		5	i. Report Date	
Integrated Advanced M	icrowaye Sounding H	nit-A	Septembe	er 2000
(AMSU-A), Performance			Performing Organizatio —	on Code
7. Author(s)	·		Performing Organization	on Report No.
, ,			11155A	
R. Haigh		1	10. Work Unit No.	
Performing Organization Name an	d Address			
Aerojet		Ī	11. Contract or Grant No	
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Azusa, CA		1	13. Type of Report and P	eriod Covered
12. Sponsoring Agency Name and Ad NASA	ogress		Final	
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	, Maryland 20771			
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17. Key Words (Suggested by Author	pr(s))	18. Distribution	Statement	
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19. Security Classif. (of this report)	20. Security Classif. (of t	his page)	21. No. of pages	22. Price
Unclassified	Unclassified			

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6. AUTHOR(S) R. Haigh							
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Aerojet					PERFORMING ORGANIZATION REPORT NUMBER		
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14. SUBJECT TERMS EOS						15. NUMBER OF PAGES	
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